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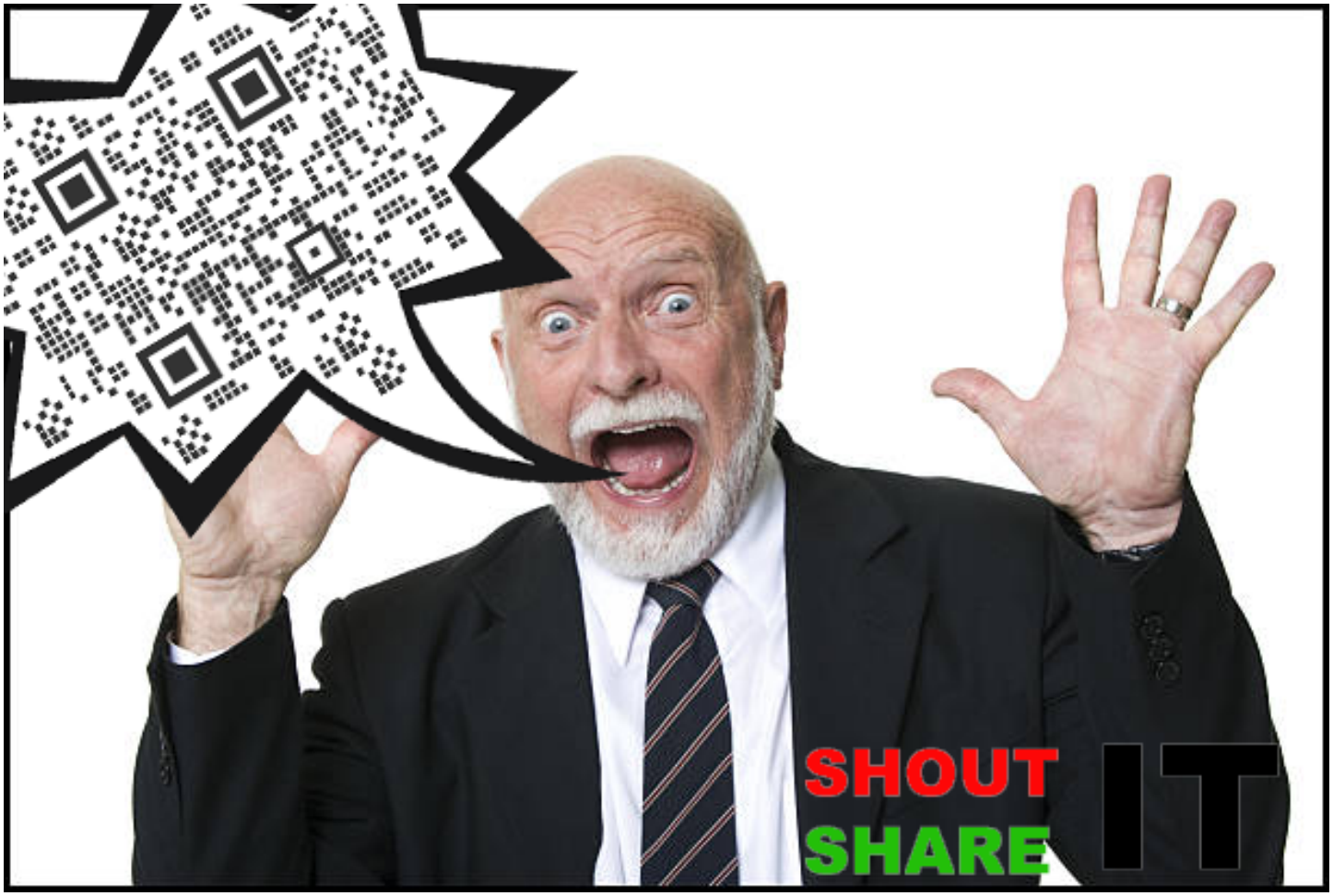
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A PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumoegen and Harrison G. Dyar.

In the present revision, we have in view, for the first object, the correction of the synonymy of species. We have also given synopses of the families, genera and species of the North American Bombyces, including all described from this region except certain ones which we cannot determine from the published descriptions, but which are listed at the end of this paper. Certain other species which we have not been able to examine and of which we have found no published account of structure, are given at the end of their respective families.

We have not altered the limits of the superfamily Bombyces as it has generally been understood; but we do not attempt to define this group. The characteristics of the several families are too diverse to allow of a comprehensive definition which would exclude all of the other divisions of the moths. We have adopted the families substantially as they stand in Prof. Smith's list; but the serial arrangement of both families and genera is arbitrary, as we follow the order of the synoptic tables. Descriptions of families, subfamilies and genera are omitted to save space; but the salient points of difference can be inferred from the synopses.

Under the name Euchromiidæ we include the Syntomidæ and Ctenuchidæ of Prof. Smith's list. We find the character relied upon to separate them to be inconstant. The Agaristidæ represent an approach to the Noctuidæ in venation as well as in the characters of egg and larva. The Pyromorphidæ are unchanged, except that we have transferred a series of species to *Triprocris* which were wrongly described under *Lycomorpha*. Under the

Lagoidæ we include *Lagoa* and its allies, and also *Dalcerides*, which differs in many respects, probably representing another family. We find *Phryganidia* to be a true Dioptid. We have separated the Lacosomidæ from the Psychidæ and also from the Drepanulidæ, believing that the absence of the frenulum sufficiently distinguishes them from both; while the different wing shape and venation and the occurrence of winged females further separate them from the Psychidæ, which they so much resemble in the habits of the larvæ. We have not restricted the Saturniidæ to the narrow limits proposed by Prof. Smith; but follow Mr. Kirby in this instance. The "Bombycidæ" of the list are included under the Lasiocampidæ and we recognize two subfamilies. Of the genera under "Heterogynidæ," *Penthetria* is a Lithosian; *Thia* is unknown to us, but may belong to the Microlepidoptera, where we also refer *Octa*. Following Mr. Kirby, we have not separated the Nycteolidæ* from the Lithosiidæ.

We hope the present revision will be of service in the determination of the North American species of Bombyces, and may save laborious reference to scattered publications. With this object in view, we have included brief descriptions of all the species, which appear here together for the first time. For full descriptions we must refer to the original papers.

We are indebted to Mr. W. F. Kirby for his valuable "Catalogue of Lepidoptera Heterocera" upon which we have relied to a great extent, except in the matter of synonymy of species. We are also indebted to Prof. J. B. Smith for friendly criticism and to Mr. E. L. Graef, Mr. Wm. Beutenmuller, Mr. S. Henshaw, Mrs. A. T. Slosson and Dr. A. S. Packard for the opportunity to examine certain specimens.

Local forms, breeding true to type, but differing to no great extent from the ground form, are classed as races, whether connected by intergrading forms in the intermediate territory or not. Since the difference between a local race and local species may be a matter of degree only, the forms are placed according to our present judgment and may be differently classed by other authors. We recognize seasonally dimorphic forms in a few instances. All the varieties referred to by us are supposed to inhabit the same territory as the typical form and not to breed true to type. We have not considered aberrations as distinct from varieties.

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* *Earias obliquata* Hy. Edw. has been wrongly referred to this genus. The moth appears to be a Pyralid allied to Epipaschia.

The name of an author in brackets following a description, indicates that we have not seen the form described in nature ; but have compiled the description from that of the author named.

Preoccupied names are marked thus :— ‖

Class : **Insecta** ; Order : **Lepidoptera** ; Subórder : **Lepidoptera-Heterocera** ; Superfamily : **Bombyces.**

Synopsis of Families.

Secondaries with a frenulum.
  Vein 1 (internal) of primaries free, unbranched.
    Median vein of primaries 4-branched, rarely only 2-or 3-branched from the absence of some of the median venules.
      Primaries with one internal vein.
        Vein 8 of secondaries wanting (present in one genus) **Euchromiidæ.**
        Vein 8 of secondaries arising from the subcostal at, or beyond one third the length of cell from base (absent in 4 genera).
          Ocelli absent . . . . . **Lithosiidæ.**
          Ocelli present . . . . . **Arctiidæ.**
        Vein 8 of secondaries arising from, or near base of wing.
          Median vein of secondaries 3-branched . . . . . **Agaristidæ.**
          Median vein of secondaries 4-branched.
            Secondaries with two internal veins.
              Thorax slender, in width less than $^1/_6$ the length of fore wing . . . . . **Pericopidæ.**
              Thorax robust, more than $^1/_6$ of fore wing . . . **Liparidæ.**
            Secondaries with one internal vein . . . . . **Drepanulidæ.**
      Primaries with two internal veins.
        Vein 8 of secondaries absent . . . . . **Pyromorphidæ.**
        Vein 8 present.
          Antennæ of ♂ pectinated for the basal two thirds, or simple . . . . . **Limacodidæ.**
          Antennæ of ♂ pectinated to the tip . . . . . **Lagoidæ.**
    Median vein of primaries 3-branched.
      Vein 8 of secondaries straight ; veins 3 and 4 stalked . . **Dioptidæ.**
      Vein 8 of secondaries sinuate ; veins 3 and 4 not stalked.
        Wings entire or excavated below apex ; vein 8 of secondaries free . . . . . **Notodontidæ.**
        Robust ; forewings roundedly subfalcate ; vein 8 united to the subcostal by a cross-vein . . . . . **Bombycidæ.**
  Vein 1 of primaries sinuate and branched . . . . . **Psychidæ.**
Secondaries without frenulum.
  Secondaries unlike primaries and with less than 12 veins.
    Primaries with one internal vein.
      Median vein 3-branched, vein 2 arising about middle of cell.
        Antennæ of ♂ pectinated to the tip.
          Size medium ; antennæ singly bipectinated ; secondaries with one internal vein . . . . . **Lacosomidæ.**

Size large to very large; antennae frequently doubly bipectinated; secondaries with one or two internal veins . . **Saturniidæ.**
Antennæ of ♂ doubly bipectinated for two thirds their length . . . . . **Ceratocampidæ.**
Median vein 4-branched; vein 2 from near base of wing **Lasiocampidæ.**
Primaries with two internal, and furcate discal veins . . . . **Cossidæ.**
Secondaries like primaries, 12-veined . . . . . **Hepialidæ.**

Family EUCHROMIIDÆ.

Synopsis of genera.

Median vein of secondaries 2-branched.
Accessory cell present . . . . . **Phylloecia.**
No accessory cell.
Wings opaquely scaled . . . . . **Syntomeida.**
Wings hyaline . . . . . **Cosmosoma.**
Median vein of secondaries 3-branched . . . . . **Lycomorpha.**
Median vein of secondaries 4-branched.
Vein 8 of secondaries absent.
Wings largely hyaline . . . . . **Didasys.**
Wings opaquely scaled.
Secondaries elongate, pointed at apex . . . . . **Scepsis.**
Secondaries rounded, outer margin slightly concave.
Vein 10 of primaries absent.
Veins 9 and 10 absent, 7—8 stalked . . . . . **Philoros.**
Vein 10 only absent, 7—9 stalked . . . . . **Dahana.**
Primaries, 12-veined . . . . . **Ctenucha.**
Vein 8 of secondaries present . . . . . **Pygoctenucha.**

Genus **Phylloecia** *Guerin.*

1844—Guerin, Icon. R. anim. 504.
Callicorus Grote.
1867—Grote, Proc. Ent. Soc., Phil., VI, 182.

P. texana *Grote.*

1867—Grote, Proc. Ent. Soc., Phil., Vol. VI, p. 184.

Wings much elongated, legs, especially hind pair, very long, tufted on tibia and banded with ocherous. Antennæ black, ocherous at tip. Abdomen blue black, banded narrowly with ocherous. Vertex and front of head, center of collar and patagia and four tetragonal spots on thorax, also ocherous.

Wings blackish brown, immaculate above, the costal portion of secondaries below, light ocherous. At base of abdomen above, and on the side near the base is a silvery patch. Expanse, 35 mm.

Habitat, Texas to Honduras.

Genus **Syntomeida** *Harris.*

1839—Harris, Amer. Journ. Sc., Vol. XXXVI, p. 310.
Hippola Walker.
1854—Walker, Cat. Brit. Mus., I, p. 222.

Synopsis of Species.

Abdomen blue with dark red tip . . . . . **epilais.**
Abdomen banded with fulvous and black . . . . . **ipomoeæ.**

S. epilais *Walker.*

1854—Walker, Cat. Brit. Mus., I, p. 227.

Black, with a blue green reflection, last two joints of abdomen dark vermillion. Two round silvery white spots at base of abdomen above, and two more lateral, centrally. On fore wings a white spot at base, one in center of and end of cell, one or two between the median venules, and a large one in submedian interspace. On secondaries, a white discal spot. Expanse, 45 mm.

Habitat, Florida, Mexico, Honduras.

S. ipomoeæ, *Harris.*

1839—Harris, Amer. Journ. Sc., Vol. XXXVI, p. 316.
ferox Walker.
1854—Walker, Cat. Brit. Mus. pt. I, p. 223.
euterpe Herrich—Schäffer.
1856—Herrich—Schaeffer, Ausser. Schmett, f. 430.

Collar, anterior part of patagia, centre of thorax and abdomen (except five black bands) fulvous : antennæ, legs and wings black. On primaries a pair of somewhat diffuse yellow spots in interspaces between veins 3–4 and 4–5, and one or two very faint ones in the interspaces above, forming an oblique band directed to distal third of costa. At base of secondaries a white hyaline patch divided by the internal vein. Expanse, 40 mm.

Habitat, Southern States.

Genus **Cosmosoma** *Hübner.*

1824?—Hubner, Samml. Ex. Schmett, II.
Aristodaema, Wallengren.
1858—Wallengren, Vet. Akad. Förhandl., Vol. XV, p. 159.

C. auge *Linnaeus.*

1767—Linnaeus, Syst. Nat., I, p. 807.
omphale Hübner.
1824?—Hübner, Samml. Ex Schmett., II.

Body and legs vermillion, head, end of abdomen and a dorsal

band, blue black. Wings hyaline with the veins, discal spot and border black, the border broadest at the apex. Expanse, 35 mm.

Habitat, Florida to Panama, Antilles.

Genus **Lycomorpha** *Harris.*

1839—Harris, Amer. Journ. Sc., Vol. XXXVI, p. 317.
Anatolmis Packard.
1864—Packard, Proc. Essex Inst., Vol. IV, p. 46.

Synopsis of Species.

Thorax black centrally.
- Bases of wings bright ocher yellow . . . . . **pholus.**
- Bases of wings pinkish ocherous . . . . . *race* **miniata.**

Thorax red.
- Black border of primaries broad at internal angle . . . **coccinea.**
- Black border of primaries narrow . . . . . **grotei.**
- Black border of primaries broad throughout . . . **fulgens.**

L. pholus *Drury.*

1773—Drury, Ill. Ex. Ent., Vol. II, pl. 28, fig. 3.

race **miniata** *Pack.*

1872—Packard, Rep. Peab. Acad. Sc., Vol. IV, p. 84.

Black: patagia, basal half of primaries and basal third of secondaries ocher yellow. The yellow on primaries indents the black along the median vein. Expanse, 25–30 mm.

Habitat, Atlantic States.

The race *miniata* has the bases of wings pinkish ochraceous, more reddish on secondaries. The pinkish part occupies about the basal half of primaries, being slightly more extensive than in *pholus*.

Habitat, California.

L. coccinea *Hy. Edwards.*

1886—Hy. Edwards, Ent. Amer., Vol. II, p. 9.

Head, thorax and bases of wings bright red, border of wings and abdomen brownish black. The red extends to near apex on costa, but scarcely beyond middle on internal margin, being indented by the black opposite cell and submedian fold. Less than one half of secondaries red, outline twice indented. Expanse, 20 mm.

Habitat, Arizona.

L. grotei, *Packard.*

1864—Packard, Proc. Essex Inst., Vol. IV, p. 47.
palmerii Packard.
1872—Packard, Rep. Peab. Acad. Sc., Vol. IV, p. 84.

Deep red or slightly orange tinted. Head, abdomen, a very narrow outer border of primaries and a broad outer border of secondaries, black. The border of secondaries is variable in width. Expanse, 30 mm.

Habitat, Rocky Mountain region to Arizona.

L. fulgens *Hy. Edwards.*

1881—Hy. Edwards, Papilio, Vol. I, p. 116.

Larger than *L. grotei*, the wings broader; the black border along the outer margin of primaries is one fifth the length of wing. Secondaries black, with a red costal ray from the base.

Habitat, Arizona, Mexico.

Genus **Didasys** *Grote.*

1875—Grote, Can. Ent., Vol. VII, p. 174.

D. belæ *Grote.*

1875—Grote, Can. Ent., Vol. VII, p. 174.

Head, collar and abdomen red, the latter with dorsal black spots, black banded below. Thorax black with six narrow pale buff stripes. Wings hyaline with black veins, and black borders, which on primaries enclose a row of six orange inter-venular spots. A large orange discal spot bordered with black: extreme base of wing red. Secondaries with a black discal spot, confluent with the border. Antennæ, palpi and abdominal brushes of ♂ black. Expanse, 30 mm.

Habitat, Florida.

Genus **Scepsis** *Walker.*

1854—Walker, Cat. Brit. Mus., pt. II, p. 285.

Synopsis of Species.

Fore wings pale slate gray . . . . . **edwardsii.**
Fore wings black or brown.
  Top of head black.
    Collar pale, whitish . . . . . **wrightii.**
    Collar orange . . . . . *var.* **gravis.**
  Yellow of collar extending on to head.
    Primaries brownish black.
      Collar orange . . . . . **fulvicollis.**
      Collar pale . . . . . *var.* **pallens.**
    Primaries brown, slightly blackish . . . . . **packardii.**

S. edwardsii *Grote.*

1881—Grote, Papilio, Vol. I, p. 4.

Smooth pale slate gray, costa whitish, collar and palpi orange; abdomen shiny blue black, gray at base; secondaries sub-hyaline, with smoky black outer border and costa. Expanse, 35 mm.

Habitat, Florida.

S. wrightii *Stretch.*

1885—Stretch, Ent. Amer., Vol. I, p. 101.

var. **gravis** *Hy. Edwards.*

1886—Hy. Edwards, Ent. Amer., Vol. II, p. 8.

Black, abdomen with a bluish reflection, collar very pale yellow. Primaries dark brown, secondaries subdiaphanous centrally. The variety *gravis* has the collar dark yellow. Expanse, 30 mm.

Habitat, California.

S. fulvicollis, *Hübner.*

1806—Hübner, Samml. Ex. Schmett.

semidiaphana Harris.

1839—Harris, Amer. Journ. Sc., Vol. XXXVI, p. 318.

race **pallens** *Hy. Edwards.*

1886—Hy. Edwards, Ent. Amer., Vol. II, p. 8.

Primaries brownish black, secondaries diaphanous centrally. Abdomen blue black; collar, vertex of head and underside of patagia orange ochraceous. Expanse, 35 mm.

Habitat, Atlantic States.

The race *pallens* has the orange parts pale yellow. Expanse, 35 mm.

Habitat, Rocky Mountain region.

S. packardii *Grote.*

1865—Grote, Proc. Ent. Soc. Phila., Vol. IV, p. 318.

matthewi Hy. Edwards.

1874—Hy. Edwards, Proc. Cal. Acad., Vol. V, p. 184.

Differs from *fulvicollis* in having the fore wings pale brown with only a slight tinge of black. Expanse, 40 mm.

Habitat, Pacific Northwest.

Genus **Philoros** *Walker.*

1854—Walker, Cat. Brit. Mus. pt. II, p. 283.

P. venosa *Walker.*

1854—Walker, Cat. Brit. Mus. pt. II, p. 284.

Black, body parts shining blue, vertex of head bright red. Inner border of patagia, costa, a streak on vein 6, another on median vein from base, furcate and extending on to veins 3 and 4, and another on vein 1, all ocher yellow. Fringes of both wings white except centrally, where they are black. Expanse, 35 mm.

Habitat, Texas to Venezuela.

Genus **Dahana** *Grote.*

1875—Grote, Can. Ent., Vol. VII, p. 175.

D. atripennis *Grote.*

1875—Grote, Can. Ent., Vol VII, p. 175.

Primaries brown black, secondaries blue black, terminal half of abdomen red, edges of collar and a spot at anal angle of primaries yellow. Expanse, 30 mm.

Habitat, Florida.

Genus **Ctenucha** *Kirby.*

1837—Kirby, Faun. Bor. Amer., Vol. IV, p. 305.
Comsoprium Blanchard.
1852—Blanchard, Gay, Hist. Chile, Zool., Vol. VII, p. 67.
Euctenucha Grote.
1873—Grote, Bull. Buff. Soc., Vol. I, p. 33.

Synopsis of Species.

Thorax black, immaculate . . . . . **virginica.**
Patagia lined with yellow or red.
  Some of veins of primaries colored.
    These veins outlined in yellow . . . . . **cressonana.**
    These veins outlined in red . . . . . **sanguinaria.**
  Veins black.
    Primaries black.
      Costal edge of primaries black.
        Head and patagia red . . . . . **rubroscapus.**
        Head and patagia yellow . . . . . *var.* **ochroscapus.**
      Costal edge of primaries narrowly white.
        Head and patagia red . . . . . **multifaria.**
        Head and patagia yellow . . . . . *var.* **luteoscapus.**
    Primaries brown or blackish brown . . . . . **brunnea.**

C. virginica *Charpentier.*

1830—Charpentier, Esper. Exot. Schmett., Vol. II, Suppl. t. 2 figs. 3, 4.
latreillana Kirby.
1837—Kirby, Faun. Bor. Amer. Vol. IV, p. 305.

Black, primaries brown black ; head and front part of patagia and chest orange ochraceous. Expanse, 40 mm.

Habitat, Atlantic States.

C. cressonana *Grote.*

1863—Grote, Proc. Ent. Soc. Phila., Vol. II, p. 64.

Marked exactly like *Philoros venosa* except that the linings are very pale yellow and the fringe is entirely white. Size, shape and structure of Ctenucha, with long pectinations to ♂ antennæ. Expanse, 46 mm.

Habitat, Colorado.

C. sanguinaria *Strecker.*

1878—Strecker, Rept. Surv. Dept. Mo. (Ruffner.) app. S.S. p. 1858.

Blue black; vertex of head, prothorax laterally; inner edge of patagia and markings on the veins as in *P. venosa*, scarlet. Expanse, 45 mm. (?)

Habitat, Colorado. [Strecker.]

C. rubroscapus *Ménétriés.*

1857—Menetries, Cat. Lep. Pet., Vol. II, p. 142.
walsinghami Hy. Edwards.
1873—Hy. Edwards, Proc. Cal. Acad. Sc., Vol. V, p. 112.

var. **ochroscapus** *Grote & Robinson.*

1868—Grote & Robinson, Trans. Am. Ent. Soc., Vol. I, p. 330.
corvina Boisduval.
1869—Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 71.

Black, body blue black, apices of all four wings white on the fringe. Head and inner half of patagia bright red or yellow (var. *ochroscapus*). Expanse, 35 mm.

Habitat, California.

C. multifaria *Walker.*

1854—Walker, Cat. Brit. Mus., pt. II, p. 479.

var. **luteoscapus** *Neumoegen & Dyar.*

Black, body blue black; costal edge of primaries and all fringes white except at anal angle. Head and inner part of patagia orange red to ocher yellow. (var. *luteoscapus*).

Habitat, California.

C. brunnea, *Stretch.*

1872—Stretch, Zyg. and Bomb. of N. A., p. 30.

Fore wings brown with black veins and white costa; apices and internal angle of fringes of both wings white. Otherwise blue black; head, base of palpi, side of collar and inner part of patagia, red.

Habitat, California.

Genus **Pygoctenucha** *Grote.*

1883—Grote, Trans. Kansas Acad. Sc., Vol. VIII, p. 46.

Synopsis of Species.

Collar red, size large.
  Fringe of fore wings white . . . . . **harrisii.**
  Fringe black.
    Last two segments of abdomen red . . . . . **terminalis.**
    Last five segments red . . . . . **robinsonii.**
Collar ocher, black centrally; size small . . . . **funerea.**

P. harrisii *Boisduval.*

1869—Boisduval, Ann. Ent. Soc. Belg., Vol. XII, p. 72.

Bronzy black, the fringe of fore wings white. Abdomen blue black. Collar and last two segments of abdomen red.

Habitat, California (Boisduval).

P. terminalis *Walker.*

1854—Walker, Cat. Brit. Mus., pt. II, p. 478.
pyrrhoura Hulst.
1881—Hulst, Bull. Brook. Ent. Soc., Vol. III, p. 77.
votiva Hy. Edwards.
1884—Hy. Edwards, Papilio, Vol. IV, p. 13.

Black, with blue reflection, especially on abdomen. Collar, front of patagia, and last two segments of abdomen bright red. Expanse, 32 mm.

Habitat, Colorado to Mexico.

P. robinsonii *Boisduval.*

1869—Boisduval, Ann. Ent. Soc. Belg., Vol. XII, p. 72.

Bronzy black, head, fore part of thorax and the five last abdominal segments carmine red.

Habitat, California. [Boisduval].

P. funerea *Grote.*

1883—Grote, Trans. Kansas Acad. Sc., Vol. VIII, p. 46.

Black, with hardly any blue reflection, immaculate. Sides of collar, and tip of abdomen dark ocher yellow. Expanse, 28 mm.

Habitat, New Mexico.

The following species, unknown to us, probably belongs to the Euchromiidæ.

Erruca pertyi *Herrich—Schaeffer.*

1854—Herrich—Schaeffer, Aussereur. Schmett, fig. 240.

Black; head with two white spots; abdomen with four yellow basal spots and two lateral, interrupted white bands. Wings transparent, very narrowly margined with black.

Habitat, Georgia.

Family LITHOSIIDÆ.

Synopsis of subfamilies and genera.

Wings narrow, elongate, accessory cell usually absent . . **Lithosiinæ.**
Median vein of primaries 2-branched . . . . . **Crambidia.**
Median vein 3-branched, veins 3 and 4 stalked. . . . **Lithosia.**
Median vein 4-branched.
Ten veins on primaries.
Wings rather elongate and produced at apices.
Antennæ of ♂ finely bipectinate . . . . . **Nola.**
Antennæ simple, ciliate . . . . . **Lebena.**
Wings shorter, more rectangular . . . . . **Argyrophyes.**
Twelve veins on primaries.
Vein 7–9 on a stalk.
Median vein of secondaries 3-branched.
Color red and lead color; vein 10 midway between vein 11 and apex of cell . . . . . **Hypoprepia.**
Color black; vein 10 nearer to apex than to vein 11 . **Tantura.**
Median vein of secondaries 4-branched.
Antennæ of ♂ bipectinate . . . . . **Pagara.**
Antennæ setose, subserrate . . . . . **Bruceia.** **Hyaloscotes.**
Antennæ simple, ciliate.
Wings long, more than twice as long as broad . . **Cisthene.**
Wings broad, twice as long as broad . . . **Clemensia.**
Veins 6–7 from apex of cell; veins 8–10 on a stalk . . . **Nycteola.**
Wings broad, trigonate, thinly scaled; accessory cell present . . **Eudulinæ.** **Eudule.**

Subfamily **Lithosiinæ.**

Genus **Crambidia** *Packard*

1864—PACKARD, Proc. Ent. Soc., Phila., Vol. III, p. 99.

Synopsis of Species.

Wings brownish . . . . . **pallida.**
Wings white.
Head yellow . . . . . **cephalica.**
Head white, concolorous . . . . . **casta.**

C. **pallida** *Packard.*

1864—PACKARD, Proc. Ent. Soc., Phila., Vol. III, p. 99.

Uniform drab, abdomen and internal part of secondaries paler. Veins of fore wings broadly and distinctly lined with a pale shade. Expanse, 20 mm.

Habitat, Northern Atlantic States.

C. cephalica *Grote & Robinson.*

1870—Grote & Robinson, Trans. Am. Ent. Soc., Vol. III, p. 176.

White throughout, the vertex of head ocher yellow. Under side and costal half of secondaries above more or less pale cinereous.

Habitat, Colorado to Arizona.

C. casta *Sanborn.*

1869—Sanborn, Packard's Guide Study Ins., p. 284.
candida Hy. Edwards.
1874—Hy. Edwards, Proc. Cal. Acad. Sc., Vol. V, p. 185.

Differs from *cephalica* in having the head also white.

Habitat, Mountains of New York, Colorado and the Pacific Northwest.

Genus **Lithosia** *Fabricius.*

1798—Fabricius, Ent. Syst. Suppl., p. 459.

L. bicolor *Grote.*

1864—Grote, Proc. Ent. Soc., Phila., Vol. III, p. 74.
argillacea Packard.
1864—Packard, Proc. Ent. Soc. Phila., Vol. III, p. 98.

Dark slate gray, collar, costa of primaries and tip of abdomen ochraceous. Expanse, 25 mm.

Habitat, Northern New York, Canada, and New England to Pacific Northwest.

Genus **Nola** *Leach.*

1815—Leach, Edinb. Encycl., Vol. IX, p. 135.
Roeselia Hübner.
1872?—Hübner, Verz. bek. Schmett., p. 397.

Synopsis of Species.

Primaries without any distinct tufts	**minuscula.**
Primaries tufted in the cell.	
Gray, with one tuft	**hyemalis.**
White, with three tufts	**sorghiella.**

N. minuscula *Zeller.*

1872—Zeller, Verh. Zool.-Bot. Ges. Wien, Vol. XXII, p. 455.
fuscula Grote.
1881—Grote, Papilio, Vol. I, p. 76.

Pale gray with three blackish lines, transverse anterior, transverse posterior and subterminal, the latter waved. A dark cloud at end of cell; markings rather indistinct. A row of minute terminal dots. Secondaries whitish. Expanse, 16 mm.

Habitat, Colorado and Texas to Southern California.

N. hyemalis *Stretch.*

1885—Stretch, Ent. Amer., Vol. I, p. 102.

Very pale grayish. A dark brown streak at base of costa and three indistinct transverse lines made up of dots. Transverse anterior line oblique, straight, with a distinct brown dot near costa, made up of tufted scales.

Secondaries very pale, shaded with darker tints at apex. Expanse, 20 mm. [Stretch.]

Habitat, California, Arizona.

N. sorghiella *Riley.*

1882—Riley, Rep. Ins., 1882, p. 188, pl. 11, fig. 1.

Silvery white, with three equidistant tufts near costa of primaries. These tufts, an arcuate shade towards outer margin and a spot below cell, yellowish brown; costa and a shade along outer margin, deeper brown. Expanse, 10 mm.

Habitat, Southern States [Riley].

Genus **Lebena** *Walker.*

1866—Walker, Cat. Brit. Mus., Vol. XXXV, p. 1901.

Synopsis of Species.

Fore wings white with black bands . . . . . **melanopa.**
Fore wings gray.
  Costa of primaries with conspicuous dark spots.
    Three blackish brown costal spots . . . . **trinotata.**
    Two black spots . . . . . **minna.**
  Costa not distinctly spotted.
    Wing gray with normal black lines . . . . **ovilla.**
    Wing olive brown with white shades . . . . **anfracta.**

L. melanopa *Zeller.*

1872—Zeller, Verh. Zool.-bot. Ges., Wien, Vol. XXII, p. 458.

White; costa of primaries and a median transverse band black. Outer margin lead gray with black terminal dashes. Secondaries blackish. Expanse, 19 mm.

Habitat, Atlantic States to Texas.

L. trinotata *Walker.*

1866—Walker, Cat. Brit. Mus., Vol. XXXV, p. 192.
sexmaculata Grote.
1877—Grote, Can. Ent., Vol. IX, p. 235.

Silvery gray; trans.-ant., trans.-post. and subterminal lines dark brown, waved, often indistinct. At base of costa a dark

brown dash; another at trans.-ant. line widening into the cell; a third on costa centrally, large, triangular. Secondaries very pale gray. Expanse, 20 mm.

Habitat, Atlantic States.

L. minna *Butler.*

1881—Butler, Ann. Mag. Nat. Hist., (5) Vol. VIII, p. 315.

Silvery gray; a black-brown dash at base of costa; a black spot at basal third; a larger rhomboidal jet black spot in the cell and an oblique series of four blackish dots from this to inner margin; a black dot at end of cell and trans.-post. and subterminal lines of blackish spots, the latter waved. Expanse, 24 mm.

Habitat, California [Butler].

L. ovilla *Grote.*

1875—Grote, Can. Ent. Vol. VII, p. 221.

Grayish white; trans.-ant. and trans.-post. lines black, the latter denticulate, followed by a pure white shade. A similar shade in place of the subterminal line. Hind wings dusty white. Expanse, 16 mm.

Habitat, Northern Atlantic States [Grote].

L. anfracta *Hy. Edwards.*

1881—Hy. Edwards, Papilio, Vol. I, p. 12.

Primaries olive brown with white shades. Trans.-ant. and trans.-post. lines whitish, shaded with grayish on the edges, each enclosing a darker line. Trans.-post. line outwardly arcuate opposite the cell, terminating in a white blotch; before apex, four more white blotches. Margin broadly silvery white, succeeded by a pale olivaceous space inwardly. A row of terminal brown dots. Expanse, 20 mm.

Habitat, Sierra Nevada of California [Edwards].

Genus **Argyrophyes** *Grote.*

1873—Grote, Bull. Buff. Soc. Nat. Hist., p. 175.

Synopsis of Species.

A broad median blackish band on primaries	**pustulata.**
No distinct median band	**cilicoides.**

A. pustulata *Walker.*

1865—Walker, Cat. Brit. Mus., Vol. XXXIII, p. 795.
nigrofasciata Zeller.
1872—Zeller, Verh. Zool.-bot. Ges. Wien, Vol. XXII, p. 454.
obaurata Morrison.
1874—Morrison, Proc. Bost. Soc. N. H., Vol. XVII, p. 154.

White; costa at base and a broad median band blackish brown, the latter with metallic scales and narrowly divided below median vein into rounded patches. A curved smoky subterminal line. A dark terminal shade. Secondaries smoky brown outwardly. Expanse, 17 mm.

Habitat, Northern Atlantic States.

A. cilicoides *Grote.*

1873—Grote, Bull. Buff. Soc. Nat. Hist., Vol. I, p. 175.

Chalk white; on outer half of wing the terminal portion of median space is shaded with smoky, enclosing a raised blotch of black metallic scales at end of cell; a curved smoky subterminal line. Secondaries white, with a smoky shading at margin. Expanse, 16 mm. [Grote].

Habitat, Atlantic States.

Genus **Hypoprepia** *Hübner.*

1825—Hübner, Zutr. ex Schmett, Vol. III, p. 21.

Synopsis of Species.

Ground color of primaries entirely red.
- Hind wings with broad lead colored border . . . . **miniata.**
- This border lacking . . . . . *var.* **subornata.**

Ground color partly yellow, partly red.
- Lead colored border on primaries moderate, border of hinds wings narrow . . . . . **fucosa.**
- Lead color predominating, border of secondaries broad . *var.* **plumbea.**

Ground color entirely yellowish . . . . . **cadaverosa.**

Fore wing nearly entirely gray, thinly scaled . . . . **inculta.**

H. miniata *Kirby.*

1857—Kirby, Richardson's Faun. Bor. Amer., Vol. IV, p. 305.
vittata Harris.
1841—Harris, Rep. Ins. Mass., p. 241.

var. **subornata** *Neumoegen & Dyar.*

1893—Neumoegen & Dyar, Can. Ent., Vol. XXV, p. 124.

Red; antennæ black. A broad stripe near costa, another from base to internal angle, and a short one from end of median vein to outer margin, as well as the fringe, dark lead color. A broad border on secondaries, occupying half the wing, also lead color but sometimes absent (var. *subornata*). Abdomen frequently more or less lead color centrally. Expanse, 30–40 mm.

Habitat, North Atlantic States westward.

H. fucosa *Hübner.*

1825—Hübner, Zutr. Ex Schmett, pp. 471, 472.
tricolor Fitch.
1856—Fitch, Rep. Ins. N. Y , Vol. III, p. 138.

var. **plumbea** *Hy. Edwards.*

1886—Hy. Edwards, Ent. Amer., Vol. II, p. 9.

Yellow, the body parts, outer third of primaries tinged with red: marked as in miniata. Secondaries pink, with an outer narrow lead colored border, which occasionally becomes wide. (var. *plumbea.*) Expanse, 20–30 mm.

Habitat, Northern Atlantic States westward.

H. cadaverosa *Strecker.*

1878—Strecker, Proc. Davenport Acad. Sc , Vol. II, p. 270.

Ocherous, marked with lead color as in *miniata*, but the border of secondaries narrower and sometimes absent.

Habitat, Colorado.

H. inculta *Hy. Edwards.*

1882—Hy. Edwards, Papilio, Vol. II, p. 13.

Grayish lead color, the wings thinly scaled, secondaries subdiaphanous, pale pink, with outer and costal border of gray not sharply defined. Expanse, 25–30 mm.

Habitat, Colorado.

Genus **Tantura** *Kirby.*

1892—Kirby, Cat. Lep. Het., Vol. I, p. 86.
1893—Neumoegen & Dyar, Ent. News, Vol. IV, p. 139.
Penthetria Hy. Edwards.
1881—Hy. Edwards, Papilio, Vol. I, p. 80.

T. majuscula *Hy. Edwards.*

1881—Hy. Edwards, Papilio, Vol. I. p. 80.

Black throughout, the tip of abdomen ocherous. Primaries deep black, secondaries less so, uniform and not translucent. Expanse, 28 mm.

Habitat, Arizona.

Genus **Pagara** *Walker.*

1856—Walker, Cat. Brit. Mus., pt. VII, p. 1678.
Comacla Walker.
1864—Walker, Cat. Brit. Mus., Vol. XXXI, p. 276.
1892—Kirby, Cat. Lep. Heb. Vol. I, p. 362.
Vanessodes Grote and Robinson.
1871—Grote & Robinson, Trans. Ent. Am. Soc., Vol. III, p. 176.
1892—Smith, Can. Ent., Vol. XXIV, p. 134.

Synopsis of Species.

Wings translucent, uniform pale mouse gray . . . . . **simplex.**
More opaque with irrorations and discal dot . . . . . **fuscipes.**

like simplex, white inclined to gray — eudora.

P. simplex *Walker.*

1856—Walker, Cat. Brit. Mus., pt. VII, p. 1679.
murina Walker.
1864—Walker, Cat. Brit. Mus., pt. XXXI, p. 276.
clarus Grote and Robinson.
1871—Grote & Robinson, Trans. Am. Ent. Soc., Vol. III, p. 176.

Pale mouse gray, collar and abdomen tinged with ocherous. Wings uniform in tint, translucent, darker toward apices. Antennæ dark. Expanse, 22 mm.

Habitat, Montana.

P. fuscipes *Grote.*

1883—Grote, Can. Ent., Vol. XI, p. 86.

Apices of wings squarer than in simplex. Uniform gray, blackish scales on a mouse gray ground, with obscure discal dot; central area of wings translucent, opaque toward apices. Expanse, 22 mm.

Habitat, Arizona.

P. eudora Dyar. Ent. News V. - 198.

Genus **Bruceia** *Neumoegen.*

1893—Neumoegen, Journ. N. Y. Ent. Soc., Vol. I, p. 36.

B. pulverina *Neumoegen.*

1893—Neumoegen, Journ. N. Y. Ent. Soc., Vol. I, p. 36.

Blackish gray with pale ocherous white spots on primaries very diffuse and ill defined, consisting of one in cell and at end of cell, a shade on centre of internal margin, and an irregular terminal border. Secondaries sordid white, very faintly ocherous. Expanse, 35 mm.

Habitat, Colorado.

Genus **Hyaloscotes** *Butler.*

1881—Butler, Ann. Mag. Nat. Hist., (5) Vol. VIII, p. 314.

H. fumosa *Butler.*

1881—Butler, Ann. Mag. Nat. Hist., (5) Vol. VIII, p. 314.

Semitransparent, smoky gray, with darker marginal line, veins and fringes. Body blackish, clothed with long whitish hairs; legs pale grayish brown. Expanse, 27–31 mm.

Habitat, Mt. Shasta, California. [Butler].

Genus **Cisthene** *Walker.*

1854—Walker, Cat. Brit. Mus., II, p. 533.
Byssophaga Behr.
1872—Behr, in Stretch, Zyg. and Bomb. N. A., I, p. 49.
Pyralidia Felder.
1874—Felder, Reise der Novara, Lep. IV, pl. 106, fig. 23.

Synopsis of species.

Bright colored species with pink and yellow.
A pale stripe on internal margin of primaries; apices of secondaries usually slightly covered by lead color.
Complete transverse yellowish band on primaries . . **unifascia.**
The band narrowed centrally . . . . *var.* **tenuifascia.**
A pale stripe near internal margin: apices of secondaries well covered with lead color.
A yellow mark at middle of costa . . . . . **subjecta.**
This mark absent . . . . . *var.* **plumbea.**
Dull colored species with no pink.
Secondaries nearly unicolorous, smoky.
Secondaries dirty white . . . . . **faustinula.**
Secondaries smoky gray . . . . . *var.* **fusca.**
Secondaries yellowish with the apical fourth dark gray . . **nexa.**

C. unifascia *Grote & Robinson.*

1868—Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 175.

var. **tenuifacia** *Harvey.*

1875—Harvey, Bull. Buff. Soc., Vol. III, p. 4.

Primaries slate gray with a transverse band on outer third and a longitudinal one along basal two thirds of internal margin, pale yellow. Band varies in width. Abdomen and secondaries pink, with tip of latter, or a rather broad outer border, lead color, but costal edge pink. Thorax lead color or partly or wholly yellow. Expanse, 14—15 mm.

Habitat, Southern Atlantic States from New York to Texas.

C. subjecta *Walker.*

1854—Walker, Cat. Brit. Mus., Vol. II, p. 534.
packardii Grote.
1863—Grote, Proc. Ent. Soc. Phila., Vol. II, p. 31.

var. **plumbea** *Stretch.*

1885—Stretch, Ent. Amer., Vol. I, p. 102.

Primaries lead colored with a spot on costa near apex, or without this spot. Near internal margin a yellowish band from base to near internal angle, dilated at the tip and sometimes

abbreviated. Secondaries pink, the lead colored border extending over the apex and along the costa to base. Expanse, 17 mm.

Habitat, New York to Texas.

C. faustinula *Boisduval.*

1868—Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 73.

var. **fusca** *Stretch.*

1872—Stretch, Zyg. and Bomb. of N. A., Vo'. I, p. 49.

Dark gray, a broad paler band on primaries, concolorous with secondaries, slightly yellowish, or pale gray (var. *fusca*). Expanse, 30 mm.

Habitat, California.

C. nexa *Boisduval.*

1868—Boisduval, Ann. Ent. Soc. Belg., Vol. XII, p. 74.
grisea Packard.
1872—Packard, Rep. Peab. Acad. Sc., Vol. IV, p. 84.
deserta Felder.
1874—Felder, Reise Novara Lep., IV, pl. 106, flg. 23.

Dark gray. A whitish transverse band on primaries not reaching costa, with intended edges, and narrowly bordered with black. Secondaries sordid yellowish, apex dark gray. Expanse, 21 mm.

Habitat, California.

Genus **Clemensia** *Packard.*

1864—Packard, Proc. Ent. Soc. Phil., Vol. III, p. 100.
Uxia Walker.
1866—Walker, Cat. Brit. Mus., XXXV, p. 1897.
Repa Walker.
1886—Walker, Cat. Brit. Mus., XXXV, p. 1898.

C. albata *Packard.*

1864—Packard Proc. Ent. Soc. Phil., Vol III, p. 101.
albida Walker.
1866—Walker, Cat. Brit. Mus., XXXV, p, 1897.
cana Walker.
1866—Walker, Cat. Brit. Mus., XXXV, p 1898.
irrorata Hy. Edwards.
1874—Hy. Edwards, Proc. Cal. Acad. Sc., Vol. V, p 185.

var. **umbrata** *Packard.*

1872—Packard, Rep. Peab. Acad. Sc., Vol. IV, p. 85.

White, more or less irrorate with black scales, and slightly clouded with brown, forming sometimes a broad median shade

(var. *umbrata*). A transverse anterior, median, transverse posterior and terminal lines of black spots, often faint or largely absent. A black discal dot, below which near internal margin appears a brown cloud, containing one or two black dots: secondaries white, or clouded with brown with a more or less distinct row of terminal brown dashes. Expanse, 20 mm.

Habitat, North America and Mexico.

C. lactea Strecker. Lep. Amer. I - 103.

Genus **Nycteola** *Hübner*.

1810?—Hübner, Tentamen, p. 2.
Sarrothipus Curtis.
1824—Curtis, Brit. Ent., Vol. I, fol. 29.
Axia Hübner.
1827?—Hübner, Verz. bek. Schmett, p. 395.

N. revayana *Scopoli*.

1772—Scopoli, Ann. Nat. Hist., Vol. V, p. 116, n. 130.

race **lintnerana** *Speyer*.

1875—Speyer, Stett. Ent. Zeit, Vol. XXXV, p. 170.

race **columbiana** *Hy. Edwards*.

1874—Hy. Edwards, Proc. Cal. Acad. Sc., Vol. V, p. 184.

var. **cinereana** *Neumoegen & Dyar*.

Whitish cinereous to sea-green, with basal, transverse anterior, transverse posterior, and subterminal lines, the transverse anterior and transverse posterior geminate, undulate and irregular, the basal and subterminal often more or less absent. An obscurely cordate brown discal dot: a terminal black line, sometimes becoming a row of dots. Median space usually darker, often brownish and there may be supplementary black marks filling in the space between basal and transverse anterior lines or black shades in median space. Secondaries white or a pale brown.
Expanse, 22—28 mm.

The race *lintnerana* is gray, the markings not very distinct.

Habitat, Northern Atlantic States.

The race *columbiana* varies from green to gray. In the gray form, var. *cinereana*, it differs from *lintnerana* in being larger, brighter, the colors more contrasted: the transverse anterior and transverse posterior lines both distinct, geminate, filled in with pale gray, while the secondaries are more whitish.

Habitat, Mountains of California and Pacific Northwest.

Subfamily EUDULINÆ (Geometridae)

Genus **Eudule** *Hübner.*

1823—Hübner, Zutr. Ex. Schmett, II, p. 14, n. 127.
Ameria Walker.
1854—Walker, Cat. Brit. Mus., pt. II, p. 554.
Euphanessa Packard.
1864—Packard, Proc. Ent. Soc. Phil., Vol. III, p. 102.

Synopsis of Species.

Primaries immaculate.
Color, pinkish ochraceous . . . . . **unicolor.**
Color, gray drab . . . . . **texana.**
Primaries spotted.
Spots large, with one external margin . . . . **mendica.**
Spots small without any on margin . . . . **meridiana.**

E. unicolor *Robinson.*

1869—Robinson, Ann. Lyc. N. Y., Vol. IX, p. 153.
fragilis Strecker.
1878—Strecker, Rep. Chief Eng., 1878, App. SS. p. 1859.

Uniformly pinkish ochraceous, translucent. Head and fore wings more ochraceous, antennæ black, filiform. Expanse 22 mm.

Habitat, Arizona to Texas.

E. texana *French.*

1889—French, Can. Ent., Vol. XXI, p. 161.

Gray drab, subdiaphanous; side of head, back of eyes, and base of fore wings and abdomen slightly ochraceous. Expanse, 22 mm.

Habitat, Texas. [French].

E. mendica *Walker.*

1854—Walker, Cat. Brit. Mus., pt. II, p. 576.
biseriata Herrich-Schäffer.
1853—Herrich-Schaeffer, Ausser. Schmett., I, fig. 441.

Subdiaphanous straw yellow tinged with ocherous. On primaries two transverse rows of pale purplish irregular spots, separated by the veins, with a single spot close to external margin between veins 3 and 4. Secondaries nearly diaphanous centrally. Expanse, 26 mm.

Habitat, Northern Atlantic States.

E. meridiana *Slosson.*

1889—Slosson, Ent. Amer., Vol. V, p. 7.

Brownish ocherous, darker than *mendica*. Two transverse lines of purplish spots, the transverse posterior quite regular and small, with no marginal spot. Secondaries immaculate. Expanse, 18 mm.

Habitat, Southern Atlantic States to New York.

(TO BE CONTINUED.)

A PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumœgen and Harrison G. Dyar.

(Continued from page 118.)

Family ARCTIIDÆ.

Synopsis of subfamilies and genera.

Front tuberculate . . . . . **Cydosiinæ.**
  No accessory cell . . . . . **Cydosia.**
  Accessory cell present . . . . . **Cerathosia.**
Front not tuberculate.
  Head prominent, tongue moderate or strong.
    Secondaries large and ample, folded, habitus lithosiform . **Eubaphinæ.**
      Vein 5 of secondaries faint or absent.
        Primaries long and narrow . . . . . **Coscinia.**
        Primaries broad, trigonate . . . . . **Eubaphe.**
      Vein 5 of secondaries distinct.
        Primaries broad, trigonate . . . . . **Haploa.**
        Primaries narrow, apices rounded . . . . **Utetheisa.**
    Secondaries trigonate, often disproportionately small; primaries often pointed at apex . . . . **Phægopterinæ.**
      Vein 8 of secondaries present.
        Vein 7—10 of primaries stalked.
          Primaries produced at apices, secondaries subcaudate . **Euverna.**
          Primaries broad, secondaries proportionate . . **Pareuchætes.**
        Vein 10 of primaries from subcostal on cell.
          Primaries broad, secondaries proportionate . . . **Cycnia.**
          Primaries narrow, produced at apices, secondaries smaller.
            Vein 8 of secondaries distinct, but not long . . **Halisidota.**
            Vein 8 very short, spur like . . . . . **Aemilia.**
      Vein 8 of secondaries wanting.
        Vein 5 of secondaries present.
          Vein 10 of primaries from the subcostal . . . **Eucereon.**
          Vein 7—10 on a stalk . . . . . **Zatrephes.**
        Vein 5 of secondaries wanting . . . . **Eupseudosoma.**
  Head more or less retracted, tongue weak or small . . . **Arctiinæ.**
    Vein 8 of secondaries wanting . . . . . **Euerythra.**
    Vein 8 present.
      Vein 7—10 of primaries stalked from apex of cell.
        Median spurs of hind tibiæ wanting.
          Anterior tibiæ unarmed.
            Antennæ of ♂ simple . . . . . **Ecpantheria.**
            Antennæ of ♂ bipectinated . . . . . **Leptarctia.**
          Anterior tibiæ armed at tip.
            Armature a stout curved spine; wings subdiaphanous blackish . . . . . **Alexicles.**
            Armature a long curved spine, wings white . . **Seirarctia.**

Armature a short spine on each side of tip . . . **Estigmene.**
Armature a small spur ; ♀ antennæ simple . . **Hyphantria.**
Median spurs of hind tibiæ present.
Antennæ of ♂ simple.
Vestiture of thorax scaly, appressed . . . . **Arachnis.**
Vestiture hairy, short, erect.
Apex of primaries acuminate . . . . **Pyrrharctia.**
Apex of primaries square . . . . **Phragmatobia.**
Antennæ of ♂ pectinate.
Wings moderate, size medium.
Ocelli close to margin of eye . . . . **Spilosoma.**
Ocelli distant from margin.
Front narrowed above and below . . . **Elpis.**
Front square, not narrowed . . . . **Neoarctia.**
Wings broad, size large . . . . . **Platarctia.**
Vein 10 from subcostal on cell.
Accessory cell wanting.
Wings broad, size large . . . . . **Arctia.**
Wings moderate, smaller . . . . . **Eyprepia.**
Wings elongate, size very small . . . . **Kodiosoma.**
Accessory cell present.
Spurs of posterior tibiæ long.
Size small ; body rather slender . . . . **Parasemia.**
Size large ; body more robust . . . . **Hypercompa.**
Spurs of posterior tibiæ very short . . . . **Ectypia.**

Subfamily **Cydosiinæ.**

Genus **Cydosia** *Westwood.*

1841—Westwood, Jardine Nat. Lib., Vol. XXXVII, p. 193.

1888—Smith, Proc. U. S. Nat. Mus., Vol. XI, p. 187.

C. nobilitella *Cramer.*

1782—Cramer, Pap. Exot., Vol. III, pl. 264, fig. G.

1873—*imitella* Stretch, Zyg. and Bomb. N. A., Vol. I, p. 163.

var. **auriviitta** *Grote & Robinson.*

1869—Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 186.

Brownish black with a blue reflection, secondaries paler. End of abdomen ocherous brown in ♂. Primaries crossed by two golden brown bands, the outer arcuate opposite the cell, and a subquadrate golden brown discal spot. Between these markings are a series of large rounded white spots in four or five rows, two or three spots in a row. These may be entirely absent (var. *aurivitta*). Expanse, 20—32 mm.

Habitat, Cuba, Mexico, Texas.

Genus **Cerathosia** *Smith.*

1887—Smith, Ent. Amer., Vol. III, p. 79.

C. tricolor *Smith.*

1887—Smith, Ent. Amer., Vol. III, p. 79.

Thorax and primaries silky white with many black dots, not forming distinct rows except at outer margin of primaries where they form an outer irregular subterminal and terminal one. Abdomen and secondaries immaculate, pale straw yellow. Expanse, 25 mm.

Habitat, Texas.

Subfamily **Eubaphinæ.**

Genus **Coscinia** *Hübner.*

1822—Hübner, Verz. bek. Schmett., p. 169.
1822—*Spiris* Hübner, Verz. bek. Schmett., p. 169.
1825—*Eulepis* Curtis, Brit. Ent., Vol. II, pl. 56.
1829—*Emydia* Boisduval, Ind. Meth., p. 39.

C. ampla *Grote.*

1878—Grote, Can. Ent., Vol. X, p. 232.

Fore wings white above, secondaries and underside pale gray. Costa and terminal line black, the latter interrupted by the veins. Two small black spots at end of cell, one in centre of cell, and three more near base forming a triangle; some of these occasionally faint or absent. Secondaries with terminal black line, immaculate. Fringe white. Expanse, 32 mm.

Habitat, Arizona.

Genus **Eubaphe** *Hübner.*

1823—Hübner, Zutr. Ex. Schmett., Vol. II, p. 9.
1823—*Crocota* Hübner, Zutr. Ex. Schmett., Vol. II, p. 28.
1855—*Holomelina* Herrich-Schæffer, Ausser. Schmett., Vol. I, p. 17.

Synopsis of species.

Secondaries with a very broad, brownish black unbroken marginal border.
  Fore wings brownish black . . . . . **læta.**
  Fore wings leaden gray . . . . . **intermedia.**
  Fore wings fawn color . . . . . **ostenta.**
Secondaries with a narrow or broken blackish border, often faint or entirely absent.
  Fore wings pale stone color, dusted with red . . . . **costata.**
  Fore wings brownish tawny, unspotted, sometimes suffused with black.
    Hind wings red . . . . . **opella.**
    Hind wings black . . . . . *var.* **nigricans.**
  Fore wings varying from deep chocolate brown to dull ocher yellow, often with a darker submarginal band.
    Broad winged, fragile; expanse, 25—30 mm.; marks slight.
      Secondaries immaculate . . . . . **immaculata.**
      Secondaries with two or three dusky spots . . *var.* **trimaculosa.**
    Narrower winged; expanse, 16—25 mm.; often heavily marked.
      Wings unspotted.
        Fore wings brownish . . . . . **aurantiaca.**
        Fore wings ochraceous.
          Of normal size . . . . . *var.* **rubicundaria.**
          Size very small (16 mm.) . . . . *var.* **diminutiva.**
      Hind wings spotted with blackish.
        Fore wings without white spots.
          A few marginal black spots on hind wings . *var.* **ferruginosa.**
          A continuous black band . . . . *var.* **brevicornis.**
        Fore wings with white spots . . . . *var.* **quinaria.**

E. laeta *Guérin.*

1839—44—Guérin, Icon. R. Anim. Insp., p. 519.
1865—*treatii* Grote, Proc. Ent. Soc. Phil., Vol. IV, p. 322.
1887—*rubropicta* Packard, Ent. Amer., Vol. III, p. 52.

Brownish black, collar, abdomen and basal two-thirds of secondaries brick red. Expanse, 18—25 mm.

Habitat, Atlantic States to Texas.

E. intermedia *Graef.*

1887—Græf, Ent. Amer., Vol. III, p. 42.

var. **parvula** *Neumoegen & Dyar.*

1893—Neumoegen & Dyar, Ent. News, Vol. IV, p. 140.

Thorax and fore wings slate gray, collar and basal part of secondaries bright red; abdomen and outer margin of secondaries black. This border varies in width from two thirds the width of wing (typical) to one third or less (var. *parvula*). Expanse, 22 mm.

Habitat, Colorado to Texas.

E. ostenta *Hy. Edwards.*

1881—Hy. Edwards, Papilio, Vol. I, p. 12.

Primaries and thorax brownish ochraceous; abdomen black above, red on the sides; secondaries red at the base with an outer black border with irregular edge. This border extends along outer and anal margins being very broad opposite anal angle. Expanse, 30 mm.

Habitat, Arizona.

E. costata *Stretch.*

1885—Stretch, Ent. Amer., Vol. I, p. 103.

1887—*opelloides* Græf, Ent. Amer., Vol. III, p. 42.

Thorax pale stone color, collar narrowly edged with red; abdomen red. Primaries pale stone color, dusted with red scales which are most conspicuous, along costa and on discal cross-vein. Secondaries pale reddish. Expanse, 28 mm.

Habitat, Texas [Stretch].

E. opella *Grote.*

1863—Grote, Proc. Ent. Soc. Phil., Vol. I, p. 345.

var. **nigricans** *Reakirt.*

1864—Reakirt, Proc. Ent. Soc. Phil., Vol. II, p. 371.

1865—*nigrifera* Walker, Cat. Brit. Mus., pt. XXXII, p. 499.

1885—*obscura* Stretch, Ent. Amer., Vol. I, p. 103.

Brownish tawny, more or less shaded with black. Secondaries reddish with discal spot, or entirely blackish. In the var. *nigricans*, the whole insect is suffused with black. Expanse, 30 mm.

Habitat, Atlantic States.

E. immaculata *Reakirt.*

1864—Reakirt, Proc. Ent. Soc. Phil., Vol. II, p. 372.

var. **trimaculosa** *Reakirt.*

1864—Reakirt, Proc. Ent. Soc. Phil., Vol. II, p. 372.

Fore wings rose color, shaded with brownish at base, subterminally and in a discal spot; or the brownish tint may extend nearly evenly over the whole wing. Sometimes a faint, round, whitish spot in the interspace below origin of vein 2. Secondaries rosy, immaculate, or with a submarginal row of three dusky spots, the two nearest anal angle connected. Expanse, 25—30 mm.

Habitat, Northern Atlantic States.

E. aurantiaca *Hübner.*

1823—Hübner, Zutr. Ex. Schmett., Vol. II, n. 206.

var. **rubicundaria** *Hübner.*

1823—Hübner, Zutr. Ex. Schmett., Vol. II, n. 256.

1890 - *rosa* French, Can. Ent., Vol. XXII, p. 133.

var. **diminutiva** *Graef.*

1887—Græf, Ent. Amer., Vol. III, p. 42.

var. **ferruginosa** *Walker.*

1854—Walker, Cat. Brit. Mus., Vol. II, p. 535.

var. **brevicornis** *Walker.*

1854—Walker, Cat. Brit. Mus., Vol. II, p. 536.

1885 - *belfragei* Stretch, Ent. Amer., Vol. I, p. 103.

var. **quinaria** *Grote.*

1863—Grote, Proc. Ent. Soc. Phil., Vol. II, p. 30.

1864 - *choriona* Reakirt, Proc. Ent. Soc. Phil., Vol. II, p. 371.

1869 - *bimaculata* Saunders, Can. Ent., Vol. II, p. 5.

Fore wings chocolate brown to yellowish fawn color, immaculate or indistinctly shaded with transverse brown bands, with obscure discal dot, and occasionally one or more large whitish spots (var. *quinaria*). Secondaries reddish, or rosy red, immaculate or with a rather broad outer blackish border, and discal dot or the border may be broken up into spots. Expanse, 20—28 mm; of var. *diminutiva* 16 mm.

Habitat, Atlantic States to Rocky Mountains and Texas.

Genus **Haploa** *Hübner.*

1822—Hübner, Verz. bek. Schmett., p. 182.

Synopsis of species.

Secondaries yellow.
  Fore wings marked with an incomplete brown border.
    A half band from internal margin before anal angle, pointing upward . . . . . **clymene.**
    Several complete slender bands . . . . . **colona.**
  Fore wings white . . . . . *var.* **conscita.**
Secondaries white.
  Fore wings with brown marks.
    Wings crossed by several distinct bands, which may be more or less obsolete.
      The most distinct band an oblique one from below apex to outer quarter of inner margin.
        Besides this two or three other transverse bands . . **lecontei.**
        Only the oblique band complete . . . . . *var.* **confinis.**
        Oblique band broken . . . . . *var.* **militaris.**
      The most distinct band a reversed oblique one from about middle of costa to internal angle.
        This band forming about a right angle with the costal stripe **contigua.**
        Forming an oblique angle with costal stripe and supplemented by other bands . . . . . **reversa.**
    Wings divided into eight to ten rounded spots by confused brown bands, the basal spots sometimes confluent . **confusa.**
  Fore wings white.
    Size moderate, wings thickly scaled [see *lecontei* and *reversa*.]
    Small and more fragile . . . . . **vestalis.**

H. clymene *Brown.*

1776—Brown, Ill. Zool., p. 96.
1824—*interrupto-marginata* Beauvois, In. Afr. and Amer., p. 265.
1855—*comma* Walker, Cat. Brlt. Mus., Vol. III, p. 652.

Fore wings yellowish white, a dark brown stripe on costa from base nearly to apex; another on outer margin widest centrally, a third along inner margin, sending up a rounded projection opposite end of cell. Secondaries orange ochraceous with a black spot near anal angle. Head ocherous, thorax yellowish white, abdomen ocherous, a broad brown dorsal band on thorax and abdomen. Expanse, 45 mm.

Habitat, Atlantic States.

H. colona *Hübner.*

1804—Hübner, Eur. Schmett., Vol. II, fig. 135.
1786—‖*clymene* Esper, Schmett., Vol. IV, p. 10.
1841—*carolina* Harris, Rep. Ins. Mass., p. 243.

var. **conscita** *Walker.*

1865—Walker, Cat. Brit. Mus., pt. XXXII, p. 377.
1887—*lactata* Smith, Ent. Amer., Vol. III, p. 25.

Marked like *clymene* except that there is no projection from the band on inner margin, and there are the following additional bands:— a brown band from inner third of costa to above internal angle; another from near middle of costa to below internal angle crossing the former. A third from above the junction of the first to just below apex. This latter band is projected toward costa and outer margin forming sometimes a fourth band from outer fourth of costa to middle of outer margin. These bands may be more or less absent, and in the var. *conscita* the wings are immaculate. Expanse, 55 mm.

Habitat, Southern Atlantic States to Texas.

H. lecontei *Guérin.*

1829—41—Guerin, Icon. R. An. Ins., p. 517.
1858—*leucomelas* Herrich-Schæffer, Ausser. Schmett., Vol. I, fig. 431.

var. **confinis** *Walker.*

1855—Walker, Cat. Brit. Mus., Vol. III, p. 651.

var. **militaris** *Harris.*

1841—Harris, Rep. Ins. Mass., p. 243.

.var **fulvicosta** *Clemens.**

1861—Clemens, Proc. Acad. Sci. Phil., 1860, p. 536.

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* This name evidently applies to no natural species. Both *lecontei* and *reversa* and perhaps also *contigua* produce forms without any black marks, which are indistinguishable by maculation. Since the name *fulvicosta* covers portions of two or more species, we propose to restrict it to the white variety of *lecontei*, and suggest a new name for the corresponding form of *reversa*.

White; head ocherous, body with a more or less well defined dorsal brown stripe. Besides the usual brown border, the fore wings have an oblique stripe from just below apex to outer fourth of inner margin, and three transverse equidistant bands. The two outer from costa to the stripe, the basal one to internal margin. In the less distinctly spotted forms these bands disappear, the oblique band and finally the border also, leaving the wing white with ocherous costal margin (var. *fulvicosta*). Expanse, 45 mm.

Habitat, Atlantic States westward.

H. contigua *Walker*.

1855—Walker, Cat. Brit. Mus., pt. III, p. 651.

In this form the transverse bands consist of two, an inner oblique from internal angle to near middle of costa, and an outer band from just below apex, joining the inner band near its middle and running nearly parallel to the costa. In less well marked forms, the outer band disappears first.

Habitat, Atlantic States.

H. reversa *Stretch*.

1885—Stretch, Ent. Amer., Vol. I, p. 104.
1887—*suffusa* Smith, Ent. Amer., Vol. III, p. 25.

var. **duplicata** *Neumoegen & Dyar*.

White, marked like *colona*. The brown markings disappear as in that species, leaving an immaculate white form (var. *duplicata*).

Habitat, Southern States.

H. confusa *Lyman*.

1887—Lyman, Can. Ent., Vol. XIX, p. 185.

White, the body parts normally marked. Primaries marked as in *lecontei* but confused by an additional band (as in *reversa*) which runs from the internal angle upward and inward, and tends to divide the median white space so that the wing appears brown with six or seven rounded white spots. The disappearance of the bands takes place as in *lecontei*, from the base outward; but the oblique band is not left complete, but as a sharply angulated line from inner margin to apex, bent at right angles at its lower third and joined to the costa by the one or two outer transverse bands. Expanse, 35—40 mm.

Habitat, Northern Atlantic States, New York to Canada.

H. vestalis *Packard*.

1864—Packard, Proc. Ent. Soc. Phil., Vol. III, p 108.
1887—Smith, Proc. U. S. Nat. Mus., p. 351.

Head very pale yellow, antennæ very pale brown. Thorax and abdomen white, immaculate, legs pale fulvous. Primaries white, usually immaculate, often with the costal and outer margin a little dusky. Secondaries and under side pure white. Expanse, 33—37 mm.

Habitat, Northern Atlantic States westward. [Smith.]

Genus **Utetheisa** *Hübner.*

1822—Hübner, Verz. bek. Schmett., p. 168.
1829—*Deiopeia* Stephens, Ill. Brit. Ent. Haust., Vol. II, p. 92.

Synopsis of species.

Transverse bands of primaries orange ochraceous.
Bands complete, secondaries pink . . . . . **bella.**
Bands indistinct or absent except on costal edge.
Secondaries red . . . . . *var.* **hybrida.**
Secondaries white . . . . . *var.* **terminalis.**
Transverse bands deep rose red.
Bands complete, secondaries pink or partly so . . . **venusta.**
Bands absent except on costal edge, secondaries white . . **ornatrix.**

U. **bella** *Linnaeus.*

1758—Linnaeus, Syst. Nat., Vol. I, p, 534.

var. **hybrida** *Butler.*

1877—Butler, Trans. Ent. Soc., London, p. 321.
1877—*intermedia* Butler, Trans. Ent. Soc., London, p. 361.

var. **terminalis** *Neumoegen & Dyar.*

White, a black spot on vertex of head, two on collar and three rows on thorax. Primaries white with five transverse orange colored bands, the two outer connected by an oblique band. Alternating with these are six rows of black spots and a terminal more compact row. Secondaries rose red or pink with an outer black border, a spot near anal angle confluent with it and a subapical oblique band. Expanse, 40 mm.

Habitat, Atlantic States.

The var. *terminalis* differs in having no pink on secondaries: white with a black border. On primaries the orange bands are indicated on costa and slightly near internal margin and subterminally. Black dots present only on costa, base and subterminally and terminally.

U. **venusta** *Dalman.*

1823—Dalman, Anal. Ent., p. 28.
1854—*speciosa* Walker, Cat. Brit. Mus., pt. II, p. 568.

Like *U. bella* but the bands rose red instead of orange. One specimen has an orange tint.

Habitat, West Indies.

U. **ornatrix** *Linnaeus.*

1758—Linnaeus, Syst Nat., (3) no. 80.

Band represented by straight, even, narrow lines on costa (not shades as in var. *terminalis*), subterminal red band present. Black dots on costa, base, subterminally and terminally exactly as in var. *terminalis*. Secondaries white, with black border variable.

Habitat, Texas to Brazil, West Indies.

Subfamily **Phægopterinæ.**

Genus **Euverna** *Neumoegen & Dyar.*

1893—Neumoegen & Dyar, Ent. News, Vol. IV, p. 141.

E. clio *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 120.

White, veins of primaries partly lined with black. Thorax with three black streaks. Collar and patagia with a buff line. Abdomen ocherous above, with dorsal and lateral small black spots. Expanse, 50 mm.

Habitat, Colorado, Arizona, Southern California.

Genus **Pareuchætes** *Grote.*

1865—Grote, Proc. Ent. Soc., Phil., Vol. V, p. 245.

P. cadaverosa *Grote.*

1865—Grote, Proc. Ent. Soc., Phil., Vol. V, p. 245.

Pale ocherous, immaculate, secondaries paler, abdomen dark ocherous with small dorsal black spots. Expanse, 25 mm.

Habitat, Cuba, Florida.

Genus **Cycnia** *Hübner.*

1818—Hübner, Zutr. Ex Schmett., V. I, p. 7.
Euchætes Harris.
1841—Harris, Ins. Mass. p. 257.
Tanada Walker.
1856—Walker, Cat. Brit. Mus., pt. VII, p. 1745.
Pygarctia Grote.
1871—Grote, Can. Ent., Vol. III, p. 124.

Synopsis of species.

An oblique, pale, contrasting stripe from back of head to base of fore wing; sexes usually disimilar.
- Abdomen banded . . . . . **zonalis.**
- Abdomen spotted.
  - Secondarirs of ♂ translucent centrally . . . **scepsiformis.**
  - Secondaries of ♂ opaque . . . . . **albicosta.**

No such contrasting stripe; sexes similar.
- Costa and internal margin striped.
  - Stripes red . . . . . **spraguei.**
  - Stripes yellow.
    - Wings dark slate gray . . . . . **abdominalis.**
    - Wings very pale gray . . . . . **vivida.**
- Costa only striped.
  - Wings more or less slate color . . . . . **eglenensis.**
  - Wings white.
    - Costal stripe extending nearly to apex . . . . . **tenera.**

Costal stripe short, at base only.
Size small (less than 35 mm.) . . . *var.* **pudens.**
Size larger (45 mm. or more) . . . *race.* **sciurus.**
Wings unstriped.
Wings entirely white.
Abdomen yellow . . . . . **oregonensis.**
Abdomen red.
Vertex of head white . . . . . **elegans.**
Vertex of head red . . . . . *var.* **roseicapitis.**
Wings slate gray or brown.
Abdomen yellow] . . . . . **egle.**
Abdomen red.
Hind wings unicolorus.
Fore wings pale stone color . . . . **murina.**
Fore wings dull white . . . . . **bolteri.**
Hind wings with a pink patch at internal angle . **perlevis.**

C. zonalis *Grote.*

1882—Grote, Papilio, Vol. II, p. 131.

Blackish gray, costa ocherous, with spot on patagia, collar and vertex of head (forming an oblique band) continuing the stripes, that on head pinkish. Abdomen banded with red and black above, anal tuft white. The ♂ is unknown and is probably very dissimilar to the ♀.

Habitat, Arizona.

C. scepsiformis *Graef.**

1887—Graef, Ent. Amer., Vol. III, p. 43.

♂ Dark blackish gray, the secondaries transparent from the base to middle of wing. Collar slightly scaled with crimson; from this along shoulder to beneath base of primaries a band of white. Abdomen bright crimson with black dorsal and lateral spots. Expanse, 28 mm. ♀ Unknown.

Habitat, Texas.

C. albicosta *Walker.*

1855—Walker, Cat. Brit. Mus., pt. III, p. 630.
1892—Kirby, Cat. Lep. Het., Vol. I, p. 206.
fumidus Hy. Edwards.
1884—Hy. Edwards, Pap., Vol. IV, p. 61.

Blackish gray, color of *zonalis;* an oblique band on prothorax in both sexes, and costa of primaries in ♀ only, white. Abdomen red above with dorsal and lateral black spots; anal tuft white in ♀ only.

Habitat, Mexico.

* Mr. Beutenmüller suggests to us that this may be *C. albicosta* when worn by flight.

C. spraguei *Grote.*

1875—Grote, Can. Ent., Vol. VII, p. 200.
conspicua Neumoegen.
1890—Neumoegen, Ent. Amer., Vol. VI, p. 177.

Fore wings pale stone color, not contrasting with the almost white secondaries. Collar, edges of patagia, abdomen, costa and internal margin of primaries crimson. Abdomen with minute dorsal black dots. Expanse, 28 mm.

Habitat, Colorado.

C. abdominalis *Grote.*

1871—Grote, Can. Ent., Vol. III, p. 124.

Dark slate gray on both wings, collar, edges of patagia, costa and internal margin of primaries ocherous yellow, abdomen red with small dorsal black spots. Expanse, 35—45 mm.

Habitat, Florida.

C. vivida *Grote.*

1882—Grote, Papilio, Vol. II, p. 131.

Very pale slate gray, color of *spraguei* from which this species differs only in that the costa and internal margin of primaries are pale yellow instead of red. Body parts colored with red as in *spraguei*. Expanse, 33 mm.

Habitat, Texas.

C. eglenensis *Clemens.*

1861—Clemens, Proc. Acad. Sci., Phil., 1860, p. 533.
inopinatus Hy. Edwards.
1882—Hy. Edwards, Pap., Vol. II, p. 13.

White with lead color tinge, to mouse color, costal margin buff for the basal half. Abdomen buff with dorsal and lateral row of black spots. Expanse, 30—32 mm.

Habitat, Atlantic States.

C. tenera *Hübner.*

1818—Hübner, Zutr. Ex Schmett., Vol. I, p. 7.
collaris Fitch.
1856—Fitch, Rep. Ins., N. Y., Vol. III, p. 265.
antica Walker.
1856—Walker, Cat. Brit. Mus., pt. VII, p. 1745.

var. **pudens** *Hy. Edwards.*

1882—Hy. Edwards, Pap., Vol. II, p. 126.

race **sciurus** *Boisduval.*

1869—Boisduval, Ann. Soc. Ent., Belg., Vol. XII, p. 79.
yosemite Hy. Edwards.
1884—Hy. Edwards, Pap., Vol. III, p. 146.

White; head, collar, anterior part of thorax and costa of primaries nearly to apex, ocherous yellow. A smoky shade in discal cell. Abdomen tinged with ocherous, with dorsal and lateral black spots. Expanse, 28—35 mm.

Habitat, Atlantic States to Texas.

The race *sciurus* is larger, with a buff dash at base of costa.

Habitat, California.

C. oregonensis *Stretch.*

1874—Stretch, Zyg. and Bomb., N. A., p. 187.

Pale, smoky lead color, the veins white. Head and abdomen, except at tip, ochraceous, with dorsal and lateral rows of black spots. Secondaries and tip of abdomen nearly white. Expanse, 35 mm.

Habitat, Northern Atlantic States and Pacific Northwest.

C. elegans *Stretch.*

1874—Stretch, Zyg. and Bomb. N. A., p. 189.

var. **roseicapitis** *Neumoegen & Dyar.*

White, head narrowly rosy behind. Abdomen rosy red above with minute blackish dorsal spots. Last segment of abdomen of ♀ tufted with white.

Var. roseicapitis. Upper half of front, and vertex of head, rosy red.

Habitat, California and Arizona.

C. egle *Drury.*

1773—Drury, Ill. Ex. Ent., Vol. II, pl. 20, fig. 3.

Mouse gray, abdomen and bases of antennæ ocherous, the former with usual black spots, and white tipped in the ♀. Fore wings unicolorous, slightly sprinkled with white scales. Secondaries very slightly paler. Expanse, 35 mm.

Habitat, Atlantic States westward.

C. murina *Stretch.*

1885—Stretch, Ent. Am., Vol. I, p. 106.

Slate gray, color of egle; collar, edge of patagia very narrowly, and abdomen above, red. Vein at end of cell faintly indicated in yellowish. Expanse, 25 mm.

Habitat, Texas.

C. bolteri *Stretch.*

1855—Stretch, Ent. Amer., Vol. I, p. 106.

Collar, thorax, and primaries white with faint gray shadings. Secondaries pale slate gray. Abdomen red above with anal tuft of ♀ white. Expanse, 35 mm.

Habitat, Texas.

C. perlevis *Grote.*

1882—Grote, Pap., Vol. II, p. 131.

Very close to *murina*. The color is a little darker, and the internal third of secondaries at anal margin covered by a rosy pink patch. The abdomen has a series of distinct but small, dorsal, black spots. Expanse, 25 mm.

Habitat, Arizona.

Genus **Halisidota** *Hübner.*

1822—Hübner, Verz. bek. Schmett., p. 170.

Lophocampa Harris.

1841—Harris, Ins. Mass., p. 258.

Theages Walker.

1855—Walker, Cat. Brit. Mus., pt. III, p. 721.

Euhalesidota Grote.

1865—Grote, Proc. Ent. Soc., Phil., Vol. V, p. 243.

Synopsis of species.

Thorax black, patagia purplish . . . . . **strigosa.**

Thorax not black.

Wings thinly scaled, subtranslucent, maculation banded.

Abdomen yellowish.

Maculation of primaries strongly outlined in blackish **interlineata.**

Maculation but feebly outlined . . . . . **tesselaris.**

Abdomen red . . . . . **edwardsii.**

Wings opaquely scaled; maculation various.

Maculation transversely banded, confused or obsolete.

Distinctly banded with brown and yellow . . **maculata.**

Uniform yellow; apex pointed . . . . . **pura.**

Straw yellow, with confused brown spots . . . **longa.**

Maculation distinctly spotted, the spots corresponding to the intervals between bands.

Thoracic parts largely ocherous.

Spots on primaries ocherous.

Purplish brown shades centrally . . . . **minima.**

No shades; finely brown dotted . . . . . **mixta.**

Spots distinctly whitish . . . . . **caryæ.**

Thoracic parts white and brown.

Vertex of head and collar brown and whitish . **argentata.**

Vertex of head and collar white . . . . **ingens.**

Maculation of longitudinal brown lines of the veins on a white ground . . . . . **ambigua.**

H. strigosa *Walker.*

1885—Walker, Cat. Brit. Mus., pt. III, p. 615.
laqueata Hy. Edwards.
1887—Hy. Edwards, Ent. Amer., Vol. II, p. 166.

Thorax black, inner half of patagia and edge of collar pink flesh color. Abdomen deep red above with lateral black spots and last segment black. Wings translucent, primaries blackish brown, streaked with pale pink, in no definite markings, giving a longitudinally strigose appearance. Secondaries colorless, with outer brown border. Expanse, 45 mm.

Habitat, Hayti, Jamaica, Florida.*

H. interlineata *Walker.*

1855—Walker, Cat. Brit. Mus., Vol. III, p. 739.
jucunda Herrich-Schäffer.
1855—Herrich-Schaeffer, Ausser. Schmett., fig. 285.
cinctipes Grote.
1865—Grote, Proc. Ent. Soc., Phil., Vol. V, p. 242.
1890—Möschler, Abhand., Senck., Ges., Vol. XVI, p. 115.
davisii Hy. Edwards.
1875—Hy. Edwards, Proc. Cal. Acad. Sci., Vol. V, p. 365.

Brownish ochraceous, marked as in tessellaris but the borders of the catenulate maculations very distinct, black, the basal markings confluent with a triangular patch between vein 1 and median. Abdomen dark ocherous above, patagia and collar lined with sea-green. Expanse, 55—60 mm.

Habitat, Brazil, Mexico, Florida, Texas and Arizona.

H. tessellaris *Abbot & Smith.*

1797—Abbot & Smith, Lep. Ins., Ga., Vol. II, p. 75.
antiphola Walsh.
1864—Walsh, Proc. Bost. Soc., N. H., Vol. IX, p. 288.

form **harrisii** *Walsh.*

1864—Walsh, Proc. Ent. Soc., Phil., Vol. III, p. 430.

Pale straw yellow, the abdomen above buff, the patagia lined inwardly with green. Six bands of a darker tint cross the fore wings, the fourth not reaching below median vein. These bands are quadrate-catenulate and neatly lined on each side with brown-black. They vary much in width, examples occuring in which they are almost completely confluent.

The form *harrisii* Walsh does not differ in markings. It is considered to be a distinct species on account of larval differences

* The moth described by Mr. Edwards, was sent to him by Mr. Bruce, who informs me that it came from Florida and not from Texas as mentioned by Mr. Edwards. Edit.

which consist of orange hair pencils; in *tessellaris*, these structures are black. Expanse, 40 mm.

Habitat, Atlantic States westward.

H. edwardsii *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 129.
translucida Walker.
1865—Walker, Cat. Brit. Mus., pt. XXXI, p. 310.
quercus Boisduval.
1869—Boisduval, Ann. Ent. Soc., Belg., Vol. XII, p. 81.

race **labecula** *Grote.*

1881—Grote, Papilio, Vol. I, p. 174.

Thorax sordid buff yellow, abdomen red above, often marked with terminal black dorsal patches in the ♀. Fore wings heavily sprinkled with chocolate brown, more or less translucent, often markedly so. Six clay yellow bands cross the wings, slightly waved, the sixth (marginal) often obsolete. In very translucent specimens, the bands are distinct only on costa and internal margin.

Habitat, California.

The race *labecula* differs in having no pink tint on the secondaries, while all the markings are slightly more diffused.

Habitat, Rocky Mountain region.

H. maculata *Harris.*

1841—Harris, Ins., Mass., p. 259.
fulvoflava Walker.
1855—Walker, Cat. Brit. Mus., pt. III, p. 733.
guttifera Herrich-Schäffer.
1855—Herrich-Schaeffer, Ausser. Schmett., fig. 284.

race **angulifera** *Walker.*

1866—Walker, Lord's Nat. in Vancv., Vol. II, p. 355.
alni Hy. Edwards.
1877—Hy. Edwards, Proc. Cal. Acad. Sci., Vol. VII, p. 129.

race **agassizii** *Packard.*

1864—Packard, Proc. Ent. Soc. Phil., Vol. III, p. 128.
californica Walker.
1864—Walker, Cat. Brit. Mus., pt. XXXI, p. 371.
salicis Boisduval.
1869—Boisduval, Ann. Ent. Soc., Belg., Vol. XII, p. 81.

Head and thorax brownish ocherous, with two diffuse brown bands on the latter. Abdomen and hind wings whitish. Fore wings light yellow with six transverse, deep brown, irregular bands. The second to fourth (from base) are usually more or less confluent, the fifth is often sharply dentate outwardly and the sixth consists of a row of rounded intervenular spots. The markings

are subject to great variation, being sometimes confluent so as to cover most of the wing.

Habitat, Northern Atlantic States westward.

The race *angulifera* does not differ in the imago. The larva when young possesses red tufts instead of black ones as in *maculata*.

Habitat, Sierra Nevada of Cal., Pacific Northwest.

In the race *agassizii*, the color of the insect is a deeper yellow. It corresponds nearly with Ridgway's figure of "maize yellow" (Ridg. Nom. Col. Pl. VI, f. 21.) while the race described above are "straw yellow" (Ridg., Pl. VI, f. 17). The brown marks tend to become suffused by the yellow ground color, often largely disappearing, but leaving a spot in the fourth band at the end of the cell of the normal distinctness. This discal spot is a characteristic feature of *agassizii* and only disappears in very heavily marked specimens. This form differs almost enough to entitle it to specific rank.

Habitat, Coast region of California.

H. pura *Neumœgen.*

1882—Neumœgen, Papilio, Vol. II, p. 133.

Bright ochraceous; anterior wings very pointed, long. Secondaries whitish stramineous. On primaries, a brown discal dot and occasionally some faint brown motlings suggesting the markings of *H. maculata*. Expanse, 45 mm.

Habitat, Arizona.

H. longa *Grote.*

1880—Grote, Can. Ent., Vol. XII, p. 213.

Pale yellowish, with irregular brown dots more or less numerous; along median vein outwardly a brown streak, continued to apex more or less perfectly by two brown spots. Expanse, 45 mm.

Habitat, Florida.

H. minima *Neumœgen.*

1882—Neumœgen, Papilio, Vol. III, p. 138.

1892—Kirby, Cat. Lep. Het., Vol. I, p. 211.

armillata Hy. Edwards.

1884—Hy. Edwards, Papilio, Vol. IV, p. 76.

Pale ocherous, the spots reduced, partly obsolete, concolorous with ground, and defined by pale brown. Middle of wing, or most of it, overspread with purplish brown. Of the five rows of spots, the basal ones are enlarged, the others small and indistinct on middle of wing. Expanse, 35 mm.

Habitat, Mexico, Arizona.

H. mixta *Neumœgen.*

1882—Neumœgen, Papilio, Vol. II, p. 133.

Like *caryæ* but the spots concolorous; defined by pale brown rings, all the space between them filled in thickly with pale brown dots. The oblique brown line as in *caryæ*, but less distinct. Expanse, 40—50 mm.

Habitat, Arizona.

H. caryæ *Harris.*

1841—Harris, Ins. Mass., p. 258.

annulifascia Walker.

1853—Walker, Cat. Brit Mus., pt. III, p. 734.

porphyria Herrich-Schäffer.

1855—Herrich-Schaeffer, Ausser. Schmett., fig. 283.

Straw yellow with diffuse brown thoracic marks. Hind wings whitish. Fore wings heavily dotted with deep brown, becoming a shade beyond the cell, and an oblique line from costa near base to above internal margin. Five transverse rows of unequal fairly well rounded spots, the outer three or four rows white and slightly silvery. The third row does not reach below vein 2. Fringe checkered with white at ends of veins. Expanse, 40—50 mm.

Habitat, Atlantic States westward.

H. argentata *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 129.

race **subalpina** *French.*

1890—French, Can. Ent., Vol. XXII, p. 47.

race **sobrina** *Stretch.*

1872—Stretch, Zyg. and Bomb. N. A., Vol. I, p. 135.

Thorax, abdomen and secondaries brownish cream color, the secondaries paler. Borders of patagia, centre of thorax and three marks on collar, dark brown. Primaries dark brown with five somewhat ill defined rows of distinct, rounded, silvery white spots, becoming cream colored on costa, the brown ground dusted with cream color. Discal and apical brown marks on secondaries. Expanse, 45—55 mm.

Habitat, Mts. of California, and Pacific Northwest.

Race *subalpina*. The ground color of fore wings is rather more broken up by pale color.

Habitat, Rocky Mountain region.

Race *sobrina*. The brown ground color is deep and uniform, and the spots smaller than in *argentata*.

Habitat, Coast region of California.

H. ingens *Hy. Edwards.*

1881—Hy. Edwards, Papilio, Vol. I, p. 39.
scapularis Stretch.
1885—Stretch, Ent. Amer., Vol. I, p. 106.

Head, sides and centre of collar, terminal two-thirds of patagia and centre of thorax white. Abdomen ocher yellow above with lateral brown spots. Inner half and outer fourth of base of patagia, and ground color of primaries dark brown. Silvery white spots as in *argentata*, but larger and more confluent, almost the same color on costa as elsewhere. Secondaries whitish with small apical brown spots. Expanse, 55 mm.

Habitat, Rocky Mountain region to Arizona.

H. ambigua *Strecker.*

1878—Strecker, Proc. Dav. Acad. Sci., Vol. II, p. 274.
bolteri, Hy. Edwards.
1884—Hy. Edwards, Papilio, Vol. IV, p. 121.

Fore wings light brown, all the interspaces containing white longitudinal streaks; veins brighter brown. Thorax pale brown the patagia and collar edged with darker. Abdomen pale pinkish above. Expanse, 50 mm.

Habitat, Colorado.

Genus **Aemilia** *Kirby.*

1892—Kirby, Cat. Lep. Het., Vol. I, p. 218.
‖ *Ameles* Walker.
1855—Walker, Cat. Brit. Mus., pt. III, p. 711.

Synopsis of species.

Abdomen rosy red . . . . . **roseata.**
Abdomen yellow . . . . . **occidentalis.**

A. roseata *Walker.*

1868—Walker, Lord's Nat. in Vanc., Vol. II, p. 336.
sanguivenosa Neumœgen.
1892—Neumœgen, Can. Ent., Vol. XXIV, p. 228.

var. **cinnamonea** Boisduval.

1868—Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 80.
1869—Grote & Robinson, Trans. Am. Ent. Soc., Vol. III, p. 175.

var. **significans** *Hy. Edwards.*

1888—Hy. Edwards, Ent. Amer., Vol. III, p. 182.

Bright red; secondaries whitish subtranslucent, patagia whitish centrally. Primaries brown, veins and margins red. Of the five bands of spots on primaries, the basal ones are yellowish,

the three outer rows whitish, the last one composed of heart shaped spots. Expanse, 35 mm.

Habitat, California and the Pacific Northwest.

var. cinnamomea. "Fore wings bright red with some ill defined areas of yellow towards the base near internal margin. One example from Sonora [Mexico]" [Boisduval].

var. significans. White spots on fore wings ill defined, diffuse, confluent, forming bands which cross the veins, so that the latter are only red in the areas where the brown ground color prevails. One example from New Mexico.

A. occidentalis *French.*

1890—French, Can. Ent., Vol. XXII, p. 46.

Exactly like *roscata* but ochraceous where that is red.

Habitat, Colorado.

Genus **Eucereon** *Hubner.*

1822?—Hübner, Verz. bek. Schmett., p. 123.

E. carolina *Hy. Edwards.*

1887—Hy. Edwards, Ent. Amer., Vol. II, p. 160.

Dark brown, abdomen tinged with ocherous. Ground color of primaries sordid whitish, the veins pale brown separating a series of small dark brown spots arranged in five irregular rows, like those in *E. archias*, but smaller. Secondaries hyaline with outer smoky brown border. The species is paler than *archias.*

Habitat, Southern States.

Genus **Zatrephes** *Hubner.*

1822?—Hübner, Verz bek. Schmett., p. 171.

Z. trigona *Grote.*

1879—Grote, N. Am. Ent., Vol. I, p. 146.

Thorax lead color, collar and patagia outlined in dull orange; palpi, fore femora and side of collar crimson. Abdomen crimson above with lateral black spots, white below. Fore wings lead color shading into pinkish at internal angle. A large subapical, irregularly tetragonal, hyaline patch, bordered with yellow and black and containing four black dots on the veins. Near base of wing two diffuse yellow patches and a third further out, close to the hyaline patch. Secondaries white, with pink tinge along abdominal margin. Expanse, 36 mm.

Habitat, Colorado, New Mexico.

Genus **Eupseudosoma** *Grote.*

1865—Grote, Proc. Ent. Soc., Phil., Vol. V, p. 240.

E. floridum *Grote.*

1882—Grote, Can. Ent., Vol. XIV, p. 187.
immaculata Graef.
1887—Graef, Ent. Amer., Vol. III, p. 42.

Silvery white; abdomen bright red above centrally with a dorsal white line. Vertex of head yellowish. This form is probably not specifically distinct from the South American *E. involutum* Sepp.

Habitat, Florida, Cuba.

Subfamily **Arctiinæ.**

Genus **Euerythra** *Harvey.*

1876—Harvey, Can. Ent., Vol. VIII, p. 5.

Synopsis of species.

A median longitudinal blackish band . . . . . **phasma.**
No median longitudinal blackish band . . . . . **trimaculata.**

E. phasma *Harvey.*

1876—Harvey, Can. Ent., Vol. VIII, p. 5.

White; abdomen red ringed, a long band of blackish brown from base to middle of outer margin crossed by another from apex to internal margin. A small discal spot, and one near base below longitudinal band. All the marks divided by yellowish veins. Expanse, 28 mm.

Habitat, Texas.

E. trimaculata *Smith.*

1887—Smith, Proc. U. S. Nat. Mus., Vol. X, p. 336.

White; abdomen red ringed centrally. Three brown marks; two on costa near base and near apex respectively, and one on internal margin near internal angle, all obscurely divided by paler veins. A minute discal dot.

Habitat, Texas.

Genus **Ecpantheria** *Hubner.*

1822—Hübner, Verz. bek. Schmett., p. 183.

Synopsis of species.

Size large, secondaries caudate.
With black bordered, white abdominal spots . . . . . **garzoni.**
With black abdominal spots . . . . . **ocularia.**

Basal spots on fore wings confluent . . . . . *var.* **confluens.**
Discal area of wings denuded . . . . . *var.* **denudata.**
Size smaller, secondaries rounded . . . . . **permaculata.**

E. garzoni *Oberthur.*

1881—Oberthür, Etudes d'ent, pl. XIII, fig. 3.
sennettii Lintner.
1884—Lintner, Papilio, Vol. IV, p. 147.

White; the ring like markings on the wings, brown, narrow, well filled with white. On secondaries, a submedian and small marginal row of rings, partly filled in with black. Abdomen dark ocher yellow above, with subdorsal row of white spots edged narrowly with black, the last pair confinent in a **U** shaped mark. Expanse, 55 mm.

Habitat, Mexico, Texas.

E. ocularia Fabricius.

1775—Fabricius, Syst. Ent., p. 564, n. 29.
scribonia Stoll.
1790—Stoll, Suppl. Cram. V., pl. 41, f. 3.
1892—Kirby, Cat. Lep. Het., Vol. I, p. 216.
chryseis Olivier.
1790—Olivier, Enc. Meth., Vol. V, p. 58, n. 123.
oculatissima Abbot and Smith.
1797—Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 69.

var. **confluens** *Oberthur.*

1884—Oberthür, Etudes d'ent., p. 110, t. 17 figs. 3 and 5.

var. **denundata** *Slosson.*

1888—Slosson, Ent. Amer., Vol. III, p. 212.

White, with black rings on thorax and fore wings, those on thorax occasionally filled in with black. Along costa and internal margin, the rings are filled in with bluish white. Abdomen dark ocher above, with dorsal bands of deep shining blue black on the posterior parts of the segments, leaving a row of square ocher dorsal spots narrowly connected with an ocher subdorsal line. A row of black square lateral spots. Expanse, 58—80 mm.

Habitat, Southern Atlantic States to New York.

E. permaculata *Packard.*

1872—Packard, Rep. Peab. Acad., Vol. IV, p. 86.
1890—Smith, Can. Ent., Vol. XXII, p. 179.
reducta Grote.
1878—Grote, Bull. U. S. Geol. Surv., vol. III, p. 799.
chilensis Oberthür.
1881—Oberthür, Etudes d'Ent., p. 111, pl. XX, fig. 5.
1833—Burmeister, An. Mus. B. Aires, Vol. III, p 39, n. 18.
cæca Strecker.
1885—Stecker, Proc. Acad. N. S. Phil., 1884, p. 283.

White, with somewhat angular black spots instead of rings, but the same in pattern. Abdomen pale ocherous, with dorsal and lateral black spots, the former subconfluent into a broad band becoming smoky brown toward base. Secondaries well rounded, not at all caudate, with indistinct smoky marginal spots. Expanse, 42 mm.

Habitat, Rocky Mountain region west to California, south to Chile.

Genus **Leptarctia** *Stretch.*

1872—Stretch, Zyg. and Bomb. N. A., p. 118.

L. californiæ *Walker.*

1855—Walker, Cat. Brit. Mus., pt. III, p. 625.
lena Boisduval.
1869—Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 73.
adnata Boisduval.
1869—Boisduval, Ann. Soc. Ent., Belg., Vol. XII, p. 73.
fulvofasciata Butler.
1881—Butler, Ann. Nat. Hist., (5) Vol. VIII, p. 313.
wrightii French.
1889—French, Can. Ent., Vol. XXI, p. 224.

var. **decia** *Boisduval.*

1869—Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 72.
boisduvalii Butler.
1881—Butler, Ann. Nat. Hist. (5) Vol. VIII, p. 313.
latifasciata Butler.
1881—Butler, Ann. Nat. Hist. (5) Vol. VIII, p. 313.
albifascia French.
1889—French, Can. Ent., Vol. XXI, p 223.
occidentalis French.
1889—French, Can. Ent., Vol. XXI, p. 223.

var. **dimidiata** *Stretch.*

1872—Stretch, Zyg. and Bomb. N. A., p. 118.
stretchii Butler.
1881—Butler, Ann. Nat. Hist. (5) Vol. VII, p. 312.

Black, patagia with a yellow line: femora of fore legs red. Primaries black, or grayish black, with three irregular and broken yellowish lines, the outer almost **W**-shaped, these lines are often absent. A whitish basal dash. Secondaries yellow or red (*var. decia*) with marginal black spots, black border, or entirely black (*var. dimidiata*) or black with a median pale yellow or red line. Expanse, 25 mm.

Habitat, Rocky Mountains and Sierra Nevada.

Genus **Alexicles** *Grote.*

1883—Grote, Trans. Kansas Ac. Sci., Vol. VIII, p. 46.
1893—Dyar, Can. Ent., Vol. XXV, p. 328.

A. aspersa *Grote.*

1883—Grote, Trans. Kansas Ac. Sci., Vol. VIII., p. 46.

Subdiaphanous blackish. Fore wings obscurely clouded with black at base, subterminally and more distinctly, at end of discal cell. Veins, especially on outer half of wing, marked narrowly with white, but interruptedly, giving the appearance of short streaks. Secondaries scarcely paler, with faint discal spot. Posterior margin of eyes and annulations of tarsi reddish. Expanse, 36 mm.

Habitat, New Mexico.

Genus **Seirarctia** *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 119.

S. echo *Abbot & Smith*

Spil. niobe Stretch

1797—Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 68.

White, abdomen marked with ocherous with dorsal and lateral black spots centrally. Fore wings white; veins white, but each vein bordered on both sides by a rather broad dark brown band. Secondaries white with traces of the brown markings at margin. Expanse, 55—60 mm.

Habitat, Southern States.

Genus **Estigmene** *Hübner.*

1822—Hübner, Verz. bek. Schmett., p. 184.
Leucarctia Packard.
1864—Packard, Proc. Ent. Soc , Phil., Vol. III, p. 124.

Synopsis of species.

Fore wings black spotted . . . . . **acræa.**
Fore wings white, immaculate . . . . . **albida.**

E. acræa *Drury.*

1773—Drury, Ill. Ex. Ent., Vol. I, pl. 3, fig. 2.
caprotina Drury.
1773—Drury, Ill. Ex. Ent , Vol. I, pl. 3, fig. 3.
menthastrina Martyn.
1797—Martyn, Psyche, pl. 15, fig. 38.
pseuderminea Harris.
1841—Harris, Rep. Ins. Inj. Veg., p. 251.
californica Packard.
1864—Packard, Proc. Ent. Soc , Phil Vol. III, p. 121.
packardii Schaupp.
1882—Schaupp, Ch. list Brook. Ent. Soc., p. 8.

White, antennæ black. Fore wings white with a number of black spots which form about six irregular rows. Secondaries and whole under side in ♂ ocher yellow, white in ♀ with a few submarginal and discal black spots. Abdomen with a central ocher yellow band and dorsal and lateral black spots. Expanse, 50—60 mm.

Habitat, North America.

E. albida *Stretch.*

1874—Stretch, Zyg. and Bomb. N. A., Vol. I, p. 203

White, antennæ black, wings immaculate; secondaries with traces of black spots. Abdomen clear yellow ocher above, except the apical segment and the basal hairs. Expanse, 30 mm.

Habitat, California to Mexico.

Genus **Hyphantria** *Harris.*

1841—Harris, Ins. Mass., p. 255.

H. cunea *Drury.*

1773—Drury, Ill. Ex. Ent., Vol. I, pl. 15, fig. 4.
punctatissima Abbot and Smith.
1797—Abbot & Smith, Lep. Ins., Ga., Vol. II, pl. 10.
congrua Walker.
1855—Walker, Cat. Brit. Mus., Vol. III, p. 669.
punctata Fitch.
1856—Fitch, Rep. Ins., N. Y., Vol. III, p. 387.
pallida Packard.
1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 118.
1890- Skinner, Ent. News, Vol. I, p. 51.

var. **budea** *Hübner.*

1823—Hübner, Zutr. Ex Schmett., Vol. II, ff. 387-8.
textor Harris.
1841—Harris, Rep. Ins. Mass., p. 255.
candida Walker.
1864—Walker, Cat. Brit. Mus., pt. XXXI, p. 291.

Entirely white, fore femora yellow. In the form *cunea*, there are many black spots on primaries forming about six rows when fully present. Expanse, 20—30 mm.

Habitat, North America, throughout.

Genus **Arachnis** *Geyer.*

1837—Geyer, Zutr. Ex. Schmett., Vol. V, p. 28.

Synopsis of species.

Secondaries red.
Primaries red below . . . . . **aulea.**
Primaries yellow below . . . . . **picta.**
Secondaries yellow . . . . . **zuni.**

E. aulea *Geyer.*

1837—Geyer, Zutr. Ex. Schmett., Vol. V, ff. 913-4.
incarnata Walker.
1855—Walker, Cat. Brit. Mus., pt. III, p. 690.

Transverse, serpentine, gray, black-bordered lines as in *picta* on a white ground; but more produced longitudinally so as to appear oblique, leaving but little of the ground color visible. Secondaries red in both sexes the three bands dark gray, partly confluent.

Habitat, Honduras, Mexico.

A. picta *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 126.

race **citra** *Neumœgen & Dyar.*

1893—Neumœgen & Dyar, Ent. News, Vol. IV, p. 140.

Primaries white with six serpentine, cinereous, black-bordered bands, confused at the outer margin; on the under side of primaries the ground color becomes yellow at basal two thirds. Secondaries red, with three irregular cinereous bands, broken in the ♂. Abdomen red with dorsal and lateral gray spots: white below. Expanse, 45—55 mm.

Habitat, Southern California to Mexico.

In the race *citra*, the ground color of primaries is yellowish.
Habitat, Colorado.

A. zuni *Neumœgen.*

1890—Neumœgen, Ent. Amer., Vol. VI, p. 173.

White, with six gray serpentine bands partly broken, but confluent in a line from base to apex, their character as bands largely obscured. Secondaries white, yellow on costa and internal margin, with irregular gray spots. Abdomen yellow, with gray dorsal and lateral bands. Expanse, 50 mm.

Habitat, New Mexico.

Genus **Pyrrharctia** *Packard.*

1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 120.

P. isabella *Abbot & Smith.*

1797—Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 68.
californica Packard.
1864—Packard, Proc. Ent. Soc., Phil., Vol. III, p. 121.

Of a peculiar brownish yellow, abdomen with dorsal and lateral black spots. On primaries are some diffuse black dots, defined in about three faint dusky bands. Secondaries whitish

in ♂, pinkish in ♀ with discal and submarginal black spots. Expanse, 55 mm.

Habitat, North America.

Genus **Phragmatobia** *Stephens.*

1828—Stephens, Ill. Brit. Ent., Haust., Vol. II, p. 73.

Synopsis of species.

Expanse, 30—35 mm. . . . . **fuliginosa.**
Expanse, 40 mm. . . . . **assimilans.**

P. fuliginosa *Linnæus.*

1758—Linnaeus, Syst. Nat., Vol. I, p. 509.
rubricosa Harris.
1841—Harris, Ins. Mass., p. 253

Dark brown, subdiaphamous with two black discal dots on primaries. Secondaries reddish with black discal dots and outer border, or entirely black. Abdomen reddish, or red with dorsal and lateral black spots. Expanse, 30—35 mm.

Habitat, Northern Atlantic States, north and west. Europe, western Asia.

P. assimilans *Walker.*

1855—Walker, Cat. Brit. Mus., pt. III, p. 535.

var. **franconia** *Slosson.*

1891—Slosson, Ent. News, Vol. II, p. p. 41.

Larger than fuliginosa and more tending to reddish tints on primaries; wings more opaque. In the *var. franconia* a distinct black median band crosses the fore wing. Expanse, 40 mm.

Habitat, Mountains of New York and New England northward.

(To be Continued.)

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A PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumoegen and Harrison G. Dyar.

(Continued from Vol. I, page 180.)

Genus **Spilosoma** *Stephens.*

1828—*Spilosoma* Stephens, Ill. Brit. Ent., Haust., Vol. II, p. 74.

Synopsis of species.

Fore wings square at tip.
- Abdomen spotted.
  - Primaries white . . . . . **virginica.**
  - Primaries faintly ochraceous . . . . . **prima.**
- Abdomen immaculate white . . . . . **latipennis.**

Fore wings, acuminate, outer margin more oblique.
- Legs yellow at base . . . . . **antigone.**
- Legs red at base.
  - Abdomen black spotted . . . . . **vestalis.**
  - Abdomen immaculate white . . . . . *var* **amelaina.**

S. virginica *Fabricius.*

1798—*Bombyx virginica* Fabricius, Nat. Syst. Suppl., p. 437.

var. dubia *Walker.*

1855—*Cycnia dubia* Walker, Cat. Brit. Mus., pt. III, p. 682.

1893—*Spilosoma virginica* var. *dubia* Dyar, Can. Ent., Vol. XXV, p. 180.

White with black discal dot on primaries and sometimes submarginal ones on secondaries. Abdomen ocherous subdorsally with black dorsal and lateral spots. Fore coxæ and femora ochraceous. Expanse, 38—50 mm. — In the aberration *dubia* the wings are mouse gray with whitish veins.

Habitat, Atlantic States westward to Pacific Northwest.

S. prima *Slosson.*

1889—*S. prima* Slosson, Ent. Amer., Vol. V, p. 40.

White, but somewhat sordid or yellowish with scattered dots of dark brown. The fore tibiæ more smoky than in *virginica* which this insect closely resembles.

Habitat, Northern New York and New England northward.

S. antigone *Strecker.*

1878—*S. antigone* STRECKER, Rep. Chief Eng. Ruffner, App. ss., p. 1860; 1889—SMITH, Ent. Amer., Vol. V, p. 119.

White, fore tibiæ ochraceous. On fore wings is a black discal dot and occasionally a few dark brown dots, forming an outer band. Expanse, 45—50 mm.

Habitat, Atlantic States to Rocky Mountains.

S. latipennis *Stretch.*

1872—*S. latipennis* STRETCH, Zyg. and Bomb. N. A., p. 133.

White, fore tibiæ red. Pectinations of antennæ, and eyes black. Expanse, 40 mm.

Habitat, Atlantic States.

S. vestalis *Packard.*

1864—*S. vestalis* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 125.

var. **amelaina** *Dyar.*

1893—*S. vestalis* var. *amelaina* DYAR, Psyche, Vol. VI, p. 512.

White, fore tibiæ red. Abdomen with dorsal and lateral black spots. Fore wings with a variable number of black dots especially along costa and in an outer band. Expanse, 45—55 mm. The *var. amelaina* has the abdominal spots partly or wholly wanting.

Habitat, California and Pacific Northwest.

Genus **Elpis** *Dyar.*

1893—*Elpis* DYAR, Ent. News, Vol. IV, p. 36.

Synopsis of species.

Stalk of antennæ and thorax with red hairs.
- Fore wings brown with red tint . . . . . **rubra.**
  - Red predominating . . . . . *var.* **walsinghami.**
  - Brown largely predominating . . . . . *var.* **danbyi.**

Stalk of antennæ whitish, thorax pale brown or russet.
- Secondaries partly or largely blackish . . . . . **vagans.**
- Secondaries pale . . . . . *var.* **rufula.**

E. rubra *Neumoegen.*

1881—*Antaractia rubra* NEUMŒGEN, Pap., Vol. I, p. 79.

var. **walsinghami** *Butler.*

1881—*Antarctia walsinghami* Butler, Ann. Nat. Hist., Vol. VIII, p. 311.

var. **danbyi** *Neumoegen & Dyar.*

1893—Neumœgen & Dyar, Ent. News, Vol. IV, p. 141.

Thorax red, or brown with a red tinge (*var danbyi*). Fore wings brown with red tinge or largely red (*var. walsinghami*) with a blackish discal dot. Secondaries black, wings thinly scaled, subtranslucent. Expanse, 30 mm.

Habitat, Pacific Northwest.

E. vagans *Boisduval.*

1852—*Arctia vagans* Boisduval, Ann. Ent Soc. France, (2), Vol. X, p. 322.
1875—*Spilosoma pteridis* Hy. Edwards, Proc. Cal. Acad. Sci., Vol. V, p. 265.

var. **rufula** *Boisduval.*

1855—*Nemeophila rufula* Boisduval, Bull. Soc. Ent. France (3). Vol. III, p. 32.
1864—*Antarctia punctata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 123.
1881—*Antarctia proba* Hy. Edwards, Pap., Vol. I, p. 39.

Male; drab, sprinkled with black scales with black discal dots, Secondaries often largely or wholly black. Female brownish red with irrorations and markings as in the ♂. Expanse, 35 mm.

Habitat, California.

Genus **Neoarctia** *Neumoegen & Dyar.*

1893—*Neoarctia* Neumœgen & Dyar, Ent. News., Vol. IV, p. 141.

Synopsis of species.

Dark brown, marks indistinct . . . . . **beanii.**
Black, marks distinct . . . . . **brucei.**

N. beanii *Neumoegen.*

1891—*Antarctia beanii* Neumœgen, Can. Ent., Vol. XXIII, p. 123.

var. **fuscosa** *Neumoegen.*

1891—*A. beanii* var. *fuscosa* Neumœgen, Can. Ent., Vol. XXIII, p. 124.

Chocolate brown, abdomen reddish laterally. Fore wings subtranslucent, with a basal band and costal patch, outer transverse and angular terminal bands of pinkish color, faintly marked or absent (var. *fuscosa*). Secondaries pinkish with mesial and submarginal brown bands. Expanse, 35 mm.

Habitat, Northern Rocky Mountains.

N. brucei *Hy. Edwards.*

1888—*Arctia brucei* Hy. Edwards, Ent. Amer., Vol. III, p. 183.

Black; collar and end of abdomen reddish flesh color. Fore wings with sub-basal and transverse posterior bands, a rounded, triangular costal spot, and occasionally a terminal **W**-mark of same color. **W**-mark irregular, often absent. Secondaries pale red, with median and ou terrow of confluent black spots, the median sometimes wanting. Expanse, 35 mm.

Habitat, Colorado.

Genus **Platarctia** *Packard.*

1864—*Platarctia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 109.

Synopsis of species.

Size large; primaries brown. . . . . **hyperborea.**
Smaller, primaries black.
Markings lemon yellow; basal half of secondaries black . . **yarrowi.**
Markings buff; secondaries black only at base . . . *var.* **remissa.**

P. hyperborea *Curtis.*

1835—*Euprepia hyperboreus* CURTIS, Ross, 2nd Voy. App., p. 271.
1850—*Arctia parthenos* HARRIS, Agassiz Lake Sup., p. 390.
1860—*Arctia borealis* MÖSCHLER, Wiener Ent. Monat., Vol. IV, p. 360.

Fore wings dark brown with blackish shade. Several small white spots, especially along costa and submedian fold, representing the usual bands. Secondaries ocher yellow, sub-median band and discal spot connected by rays with a large basal black patch. Abdomen black with ocher yellow tip; collar red behind, patagia white-lined. Expanse, 70 mm.

Habitat, Mountains of New England northward.

P. yarrowi *Stretch.*

1874—*Arctia yarrowi* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 221;
1893—BEAN, Psyche, Vol. VI, p. 523.

var. remissa *Hy. Edwards.*

1888—*Arctia remissa* HY. EDWARDS, Ent. Amer., Vol. III, p. 184.

Primaries black; three square yellow patches on costa, and three similar ones on internal margin; a transverse band from costa to internal angle and an angular subapical mark, which are traces of the broken up **W**-mark. Secondaries black at base, red outwardly, with rounded black submarginal and discal spots. Body black, red at tip. Expanse, 44 mm.

Habitat, Rocky Mountain region of Canada to Hudson's Bay, Arizona, Wyoming, Vancouver Is, B. C.

Genus **Arctia** *Schrank.*

1802—*Arctia* Schrank, Fauna Boica, Vol. II (2), p. 151.
1822—*Epicallia* Hübner, Verz. bek. Schmett., p. 182.

A. **virginalis** *Boisduval.*

1852—*Arctia virginalis* Boisduval, Ann. Soc. Ent. Fr. (2), Vol. X, p. 321.

var. **guttata** *Boisduval.*

1852—Boisduval, Ann. Soc. Ent. Fr. (2), Vol. X, p. 321.

var. **ochracea** *Stretch.*

1872—Stretch, Zyg. and Bomb. N. A., Vol. I, p. 71.

Thorax and primaries black. Head, a spot on back of thorax, abdomen and secondaries orange ochraceous. Dorsal transverse bands on abdomen, and two bands with discal and marginal spots on secondaries black On fore wings, five bands of large well rounded spots, the outer band waved. A yellow spot on patagia. In the var. *guttata* the secondaries are nearly entirely black. Expanse, 50—60 mm.

Habitat, California and the Pacific Northwest to the Rocky Mountains.

Genus **Eyprepia** *Ochsenheimer.*

1810—*Eyprepia*, Ochsenheimer, Schmett. Eur., Vol. III, p. 299.
1855—*Apantesis* Walker, Cat. Brit. Mus., pt. III, p. 331.
1864—*Callarctia* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 114.
1866—*Cymbalophora* Rambur, Cat. Lep And., Vol. II, p. 231.
1886—*Orodemnias* Wallengren, Skand. Heter., Vol. II, p. 315.

Synopsis of groups. *

Veins of primaries pale lined, linings rarely obsolete in one species.
  Size medium to large, vestiture of wings opaque.
    Terminal **w**-mark present, the fourth transverse line either straight or but slightly angulated . . . **Callarctia.**
    Terminal **x**-mark, formed of the terminal **w** and the strongly angulated fourth line . . . . . **Mimarctia.**
  Size small, vestiture subdiaphanous ; lines somewhat confused. **Orodemnias.**
Veins not lined.
  Terminal **w**-mark . . . . . **Cymbalophora.**
  Terminal **x**-mark . . . . . **Apantesis.**

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* The normal thorax, in this genus, is yellowish with two black stripes on collar and three on thorax. We have indicated the bands on the fore wings as follows: — band 1, sub-basal half band, resting on costa ; band 2, transverse anterior band ; band 3, median band ; band 4, transverse posterior band, immediately adjoining band 5, the angular terminal or **w**-mark. A longitudinal band along submedian fold, joining the angular terminal and forming with it a furcation above internal angle.

GROUP CALLARCTIA *Packard.*

1864—*Callarctia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 114.

Synopsis of species.

Linings of veins broad, especially along the median vein.
  Size large ; one or two incomplete transverse bands besides the **w**-mark.
    Hind wings red . . . . . **virgo.**
    Hind wings yellow . . . . . *var.* **citrinaria.**
  Size smaller.
    Hind wings yellow.
      No transverse bands except the **w** . . . . . **virguncula.**
      Trace of one or more of these bands . . . . . *var.* **otiosa.**
    Hind wings pink ; linings of veins very broad.
      Pale marks pinkish . . . . . **michabo.**
      Of a deeper color, more reddish . . . . . *var.* **minea.**
Lining on median vein narrow, confined to the vein.
  Secondaries red, without any tendency to melanism ; marginal spots rarely confluent.
    Size large; primaries usually with three transverse bands.
      Only two transverse bands present . . . . . **intermedia.**
      Three transverse bands present . . . . . *var.* **stretchii.**
    Size smaller with two or less bands.
      Third line broken or absent ; fourth seldom rigid.
        Third and fourth lines present . . . . . **parthenice.**
        Third line absent, fourth broken . . . *var.* **approximata.**
      Third and fourth lines present, rigid, parallel . . . **rectilinea.**
  Secondaries yellow or orange red with a strong tendency to melanism; rarely intirely black ; marginal spots often confluent, basal spots often present.
    Hind wings entirely black . . . . . **anna.**
    Hind wings yellow, with even black border . . *var.* **persephone.**
    Hind wings yellow or red, lightly or heavily spotted or nearly entirely black. Basal spots present in well marked specimens.
      Three or four bands on primaries (full maculation).
        Veins indistinctly lined or not lined at all . . . . . **ornata.**
        Veins narrowly lined . . . . . , *var.* **achaia.**
      Less than three bands on primaries, sometimes but one ; but **w**-marks present . . . . . *var.* **complicata.**

E. virgo *Linnæus.*

1758—*Bombyx virgo* LINNÆUS. Syst. Nat., Vol. I, p. 501.

var. citrinaria *Neumœgen & Dyar.*

1893—*Euprepia virgo* var. *citrinaria* NEUMŒGEN & DYAR, Ent. News. Vol. IV, p. 142.

Fore wings black ; all the margins, veins and longitudinal stripes, pinkish cream color. The terminal **w**-mark is distinct, the transverse posterior (4th) line reaches from costa to stripe, angu-

lated slightly on median vein. The median (3rd) line usually reaches from costa to median vein but it may project below median vein or be absent. Rarely the 4th line is partly absent. Secondaries vermillion red with double marginal row of subtriangular black spots and two to five discal spots. Thorax normal; abdomen red with dorsal and lateral black spots, The var. *citrinaria* differs only in the color of secondaries. Expanse, 35—50 mm.

Habitat, Atlantic States westward.

E. virguncula *Kirby.*

1837—*Callimorpha virguncula* Kirby, Richardson Fauna Bor. Amer., Vol. IV, p. 304.

var. **otiosa** *Neumœgen & Dyar.*

1893—*Euprepia virguncula* var. *otiosa* Neumœgen & Dyar, Ent. News., Vol. IV, p. 142.

Smaller than *virgo*, all the transverse lines except the **w**-mark absent. Secondaries and abdomen dark ocher yellow, the former with double marginal row of spots, one discal spot, and a series of basal streaks which may become extented and fuse with the enlarged spots rendering the wing largely black. The dorsal abdominal spots are fused into a band. Expanse, 30—40 mm.

Habitat, Northern Atlantic States westward.

The *var. otiosa* has slight traces of one or more of the normal transverse lines.

E. michabo *Grote.*

1875—*Arctia michabo* Grote, Can. Ent., Vol. VII, p. 196.

var **minea** *Slosson.*

1892—*A. minea* Slosson, Ent. News., Vol. III, p. 257.

Pale marks flesh cream color, line 3 oblique, in cell from costa to median vein: line 4 slightly angulated, sometimes almost forming an irregular **x** with **w**-mark. **W** broad. Veins lined, that on median broader than the vein, but only slightly so, approaching the *parthenice* group. Apex of primaries pointed. Secondaries flesh red, pale in ♂; one to four discal, submarginal and marginal black spots. Secondaries tend to be subtranslucent recalling *arge* which the species also approaches in wing shape, but it has not the **x**-mark so well developed. Expanse, 43 mm.

Habitat, Atlantic States westward.

E. intermedia *Stretch.*

1874—*Arctia intermedia* Stretch, Zyg. and Bomb. N. A., Vol. I, p. 216.
1878—*Arctia oithona* Strecker, Lep. Roph. and Het., p. 131.

var. **stretchii** *Grote.*

1881—*A. stretchii* GROTE, Can. Ent., Vol. VII, p. 197.

Like *parthenice* but larger. On primaries, 2nd, 3rd and 4th lines from costa to longitudinal stripe, or to internal margin, or exactly like *parthenice*. Expanse, 50 or more mm.

Habitat, Southern Atlantic States from New York to Texas.

E. parthenice *Kirby.*

1837—*Callimorpha parthenice* KIRBY, Rich. Fauna Bor.Amer., Vol.IV, p. 303.
1864—*Arctia saundersii* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 75.

var. **approximata** *Stretch.*

1885—STRETCH, Ent. Amer., Vol. I, p. 104.

Fore wings marked as in *virgo* except that the median vein is only narrowly lined with pale. The median line (3) often reaches from costa to longitudinal stripe, but it may be entirely absent. The transverse posterior (4th) line is less strongly angulated than in *virgo*, rarely partly absent, giving the variety *approximata*. Secondaries red with double marginal row and one discal spot. Expanse, 30—35 mm.

Habitat, Northern New York and New England to Canada.

E. rectilinea *French.*

1879—*Arctia rectilinea* FRENCH, Can. Ent., Vol. XI, p. 45.

Differs from *parthenice* only in the obliquity of the two transverse lines which are present. The median (3rd) line runs from costa to median vein at origin of vein 2, while the transverse posterior (4th) line is straight, not angulated at median vein. The lines are thus parallel and do not converge as in *parthenice*.

Habitat, Mississippi Valley, rare in the Atlantic States.

E. anna *Grote.*

1863—*Arctia anna* GROTE, Proc. Ent. Soc. Phil , Vol. II, p. 335.

var. **persephone** *Grote.*

1863—*A. persephone* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 433.

Veins narrow lined, linear. Longitudinal stripe, 4th line and w-mark present; also 3rd line from sub-costal to median veins, or reduced, or absent. Secondaries ocherous, with discal dot and broad black border, or all black. Abdomen ocherous with black dorsal and lateral bands or entirely black. Expanse, 40—45 mm.

Habitat, Atlantic States.

E. ornata *Packard.*

1864—*Callarctia ornata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 115.
1881—*Arctia simplicior* Butler, Ann. and Mag. N.H. (6), Vol. VIII, p. 311.
1893—*Arctia blakei* var. *perpicta* Dyar, Psyche, Vol. VI, p. 381.

var. **achaia** *Grote & Robinson.*

1868—*Arctia achaia* Grote & Robinson, Trans. Amer. Ent. Soc., Vol. I, p 334.
1872—*Arctia edwardsii* Stretch, Zyg. and Bomb. N. A., Vol. I, p. 77.

var. **complicata** *Walker.*

1864—*Arctia complicata* Walker, Cat. Brit. Mus., pt. XXXI, p. 279.
1868—‡*Arctia dahurica* Grote, Trans. Amer. Ent. Soc., Vol. I, p. 336.
1872—*Arctia ochracea* Stretch, Zyg. and Bomb. N. A., Vol. I, p. 125.
1881—*Arctia barda* Hy. Edwards, Papilio, Vol. I, p. 39.

Fore wings black; linings of veins narrow, variable in distinctness, being absent in the form *ornata*, present in *achaia*. The complete transverse maculation is present, but variable, the basal half line disappearing first, followed by the transverse anterior and median lines, producing the form *complicata*. Secondaries deep ocher yellow, orange or red, with double marginal spots, and one discal, besides two basal streaks which are usually very distinct. The spots very much in size, often spreading and becoming confluent, covering the whole wing except for an irregular central area. Expanse, 30—35 mm.

Habitat, California and the Pacific Northwest.

Group MIMARCTIA *Neumœgen & Dyar.*

Synopsis of species.

Three transverse bands more or less complete besides the angular terminal band . . . . . **arge.**
Three bands absent, and also the angular terminal, either absent or reduced . . . . . *var.* **nervosa.**

E. arge *Drury.*

1773—*Noctua arge* Drury, Ill. Ex. Ent., Vol. I, pl. 18, f. 3.
1775—*Bombyx dione* Fabricius, Syst. Ent., p. 572.
1781—*Noctua incarnatoruhra* Goeze, Ent. Beytr., Vol. III (3). p. 241.
1797—*Bombyx coelebs* Martyn, Psyche, pl. II, f. 25.
1869—*Chelonia nerea* Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 77.
1869—*Chelonia doris* Boisduval, Ann. Soc. Ent. Belg , Vol. XII, p. 77.

var. **nervosa** *Neumœgen & Dyar.*

1893—*Euprepia arge* var. *nervosa* Neumœgen & Dyar, Ent. News., Vol. IV, p. 142.

Pale marks pinkish cream color, broad, predominating. Lines 2 to 4 and **w** mark present. Lines 2 and 3 cross the cell only, and project triangularly from costa and median vein respectively.

Line 3 is bent at right angles on median vein, forming terminal **x**-mark with the central limbs of the **w**. Secondaries whitish in ♂, pale salmon red in ♀, with marginal and submarginal rows and one discal black spot but reduced in size and broken by the veins. Abdomen cream color, the spots small. Expanse, 35—40 mm.

Habitat, Atlantic States westward to California.

GROUP ORODEMNIAS *Wallengren.*

1886—*Orodemnias* WALLENGREN, Skand. Het., Vol. II, p. 315.

Synopsis of species

Secondaries yellowish white.
  Pale maculations of fore wings extensive . . . . . **quenselii.**
  Maculations reduced . . . . . *var.* **speciosa.**
Secondaries red . . . . . **obliterata.**

E. quenselii *Paykull.*

1791—*Bombyx quenselii* PAYKULL, Act. Hafn., Vol. II, p. 99.
1793—*Bombyx strigosa* FABRICIUS, Ent. Syst., Vol. III (1), p. 454.
1849—*Euprepia gelida* MÖSCHLER, Stett. Ent. Zeit., Vol. IX, p. 174.

var. **speciosa** *Möschler.*

1864—*Arctia speciosa* MÖSCHLER, Wien. Ent. Monat., Vol. VIII, p. 105.

Black; secondaries of ♂ largely black with paler shadings, of ♀ partly and irregularly yellow. Primaries of ♂ with the veins narrowly lined; bands 3 to 4 present from sub-costal to median veins, narrow, reduced, irregular. **W**-mark irregular. In ♀, the marks are broader, confused, light yellow. Bands 2, 3 and 4 present from sub-costal to median vein. **W**-mark blurred. Expanse, 30—35 mm.

Habitat, Arctic regions.

E. obliterata *Stretch.*

1885—*Arctia obliterata* STRETCH, Ent. Amer., Vol. I, p. 105.

Thorax normal, abdomen yellowish, normal. Primaries blackish brown. Costa, fringes and inner margin, veins, longitudinal stripe, terminal **w**-mark and costal half of 4th band, pale yellow. Traces of median band. Secondaries dull red, the black spots present as marginal, submarginal and discal ones. Expanse 33 mm.

Habitat, unknown.

GROUP CYMBALOPHORA *Rambur.*

1866—*Cymbalophora* RAMBUR, Cat. Lep. And., Vol. II, p. 231.

Synopsis of species.

Tip of abdomen black, dorsal spots reduced.
Secondaries of ♂ whitish with black spots . . . . . **proxima.**
Secondaries without black spots . . . . . *var.* **autholea.**
Dorsal abdominal spots moderate, the terminal one not larger.
Primaries with normal maculation.
Three or more transverse lines beside the **w**-mark.
Size small.
Fore wings black . . . . . **cervinoides.**
Fore wings brown . . . . . **bolanderi.**
Size moderate.
Hind wings of ♂ pink.
Thorax normal . . . . . **blakei.**
Thorax black . . . . . *var.* **nevadensis.**
Hind wings yellow . . . . . *var.* **sulphurica.**
Hind wings deep red.
Four lines present, narrow, normal . . . . . **superba.**
Lines broad, blurred, red centered . . . . . **favorita.**
Two or less transverse lines; rarely traces of three
Fore wings brown.
One line beside **w**-mark . . . . . **williamsii.**
Two or three lines . . . . . *var.* **determinata.**
Fore wings black.
Hind wings red.
w-mark present . . . . . **phyllira.**
w-mark absent . . . . . *var.* **figurata.**
Hind wings partly yellow . . . . . *var.* **celia.**
Hind wings black . . . . . *var.* **excelsa.**
Primaries with the maculation broken into a series of spots; often largely black.
Hind wings with a black border.
A few pale dots on fore wings . . . . . **placentia.**
Many pale dots . . . . . *var.* **flammea.**
Hind wings largely black . . . . . *var.* **snowi.**

E. proxima *Guérin.*

1844—*Chelonia proxima* Guérin, Icon. R. Amer., Vol. II, p. 514.
1855—*Euprepia docta* Walker, Cat. Brit. Mus., Vol. III, p. 592.
1867—*Arctia mexicana* Grote & Robinson, Ann. Lyc. N. Y., Vol. VIII, p. 367.
1874—*Arctia arizonensis* Stretch, Zyg. & Bomb. N. A., p. 217.
1885—*Arctia mormonica* Neumœgen, Ent. Amer., Vol. I, p. 93.

var. autholea *Boisduval.*

1869—*Chelonia autholea* Boisduval, Ann. Soc. Ent. Belg., Vol. XII, p. 76.

Head and thorax ocher yellow, collar immaculate, thorax with the three normal black stripes. Abdomen vermillon above, the dorsal spots very small, but terminal segment entirely black. Veins

of primaries not lined with pale scales, except the median which is narrowly and continuously lined. Longitudinal streak, 2nd to 4th lines, and terminal **w**-mark present, often very broad and reducing the black ground to angular spots. The 3rd and 4th lines may become confluent laterally, or rarely, the 2nd and 3rd lines become so. Less often the black predominates, the 2nd line (transverse anterior) and even part of the 3rd (median) line, disappearing. Secondaries whitish in ♂ with pink abdominal border: deep red in ♀ with marginal and 1 to 3 discal dots. These dots are absent in the ♂ of the form *autholea*. Expanse, 35—45 mm.

Habitat, region west of the Rockies to Southern California and Mexico.

E. cervinoides *Strecker.*

1876—*Arctia cervinoides* STRECKER, Proc. Acad. Phil., p. 151.

Black, thorax normal, but black bands very wide. Secondaries with discal spot, marginal border and basal streaks pale black on whitish ground. Primaries brownish black, longitudinal band, **w**-mark, 2nd, 3rd and 4th bands present, and traces of 1st but variable, sometimes extending entirely across wing. Expanse, 22 mm.

Habitat, Colorado.

E. bolanderi *Stretch.*

1872—*Arctia bolanderi* STRETCH, Zyg. and Bomb. N. A., p. 76.

Thorax and abdomen normal; primaries brown with three transverse bands more or less well developed; the **w**-mark and longitudinal band present. Secondaries yellow or red with normal spottings present, one discal dot and traces of other marks. Size small. Expanse, 30 mm.

Habitat, Rocky Mountains and Sierra Nevada.

E. blakei *Grote.*

1864—*Arctia blakei* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 523.
1881—*Arctia incorrupta* HY. EDWARDS, Papilio, Vol. I, p. 38.
1889—*Arctia shastaensis* FRENCH, Can. Ent., Vol. XXI, pp. 35, 162.

var. **nevadensis** *Grote & Robinson.*

1866—*Arctia nevadensis* GROTE & ROBINSON, Proc. Ent. Soc. Phil., Vol. VI, p. 1
1872—*Arctia behrii* STRETCH, Zyg. and Bomb. N. A., p. 75.

var. **sulphurica** *Neumœgen.*

1885—*Arctia nevadensis* var. *sulphurica* NEUMŒGEN, Ent. Amer., Vol. I, p. 93.
1883—‖*Arctia ochracea* NEUMŒGEN, Papilio, Vol. III, p. 151.
1885—*Arctia elongata* STRETCH, Ent. Amer., Vol. I, p. 105.

Thorax with normal maculation or entirely black (var. *nevadensis*). Median vein not pale lined, the longitudinal line and all the transverse bands present. The lines vary much in width, but have a greater tendency to be narrow than in *proxima*. Secondaries pink in the ♂, rarely yellow (var. *sulphurica*), red in the ♀ with double marginal and one to three discal dots, the latter rarely produced towards the base. Abdomen pink or ocher, the dorsal and lateral spots moderate, even throughout, not different on the terminal segments. Expanse, 30—35 mm.

Habitat, Rocky Mountain region west to the Pacific.

E. superba *Stretch.*

1874—*Arctia superba* Stretch, Zyg. and Bomb. N. A., p. 227.
1878—*Arctia geneura* Strecker, Proc. Dav. Acad. Sc., Vol. II, p. 270.

Lines, as in *blakei*, but narrow and partly broken. Secondaries deep red but in some specimens much like *blakei*.

Habitat, Colorado, British Columbia.

E. favorita *Neumœgen.*

1890—*Arctia favorita* Neumœgen, Ent. Amer., Vol. VI, p. 173.

Like *blakei*, but line 1 absent, or but a trace left. Primaries black, but looking slightly brownish. Lines broad, confluent or normal, or all absent but lines 3 and 4. This form differs from *williamsii* only in being more black, and having the secondaries redder. It is very close to *superba*.

Habitat, Rocky Mountain region.

E. williamsii *Dodge.*

1871—*Arctia williamsii* Dodge, Can. Ent., Vol. III, p. 167.

var. **determinata** *Neumœgen.*

1881—*Arctia determinata* Neumœgen, Pap., Vol. I, p. 28.
1890—*Arctia dieckii* Neumœgen, Ent. Amer., Vol. VI, p. 62.

Primaries brown with black shades; secondaries dark red inclining to pinkish. On primaries, the longitudinal band and w-mark with one or two other bands. In the *var. determinata* two bands are present, the 3rd and 4th.

Habitat, Rocky Mountain region.

E. phyllira *Drury.*

1773—*Callimorpha phyllira* Drury, Ill. Ex. Ent., Vol. I, pl. 7, f. 2.
1781—*Geometra B-ata* Gœze, Ent. Betyr., Vol. III (3), p. 428.
1797—*Bombyx plantaginа* Martyn, Psyche, pl. 15, ff. 36-7.
1881—*Arctia dodgei* Butler, Ent. Mo. Mag., Vol. XVIII, p. 136.

var. **figurata** *Drury.*

1773—*Bombyx figurata* DRURY, Ill. Ex. Ent., Vol. II, p. 12.
1822—*Euplagia ceramica* HÜBNER, Verz. bek. Schmett., p. 180.
1878—*Arctia f-pallida* STRECKER, Rep. Chief Eng. 1878, App. ss, p. 1860.

var. **celia** *Saunders.*

1863—*Arctia celia* SAUNDERS, Proc. Ent. Soc. Phil., Vol. II, p. 59.
1888—*Arctia franconia* HY. EDWARDS, Ent. Amer., Vol. III, p. 184.

var. **excelsa** *Neumœgen.*

1883—*Arctia excelsa* NEUMŒGEN, Pap., Vol. III, p. 70.
1887—*Arctia lugubris* HULST, Ent. Amer., Vol. II, p. 182.

Thorax normal, abdomen red with normal spots. Primaries black, longitudinal stripe, lines 3—4, and **w**-mark moderate, cream colored. Lines 3 and 4 divergent or parallel, from costa to stripe. Secondaries red; discal, marginal, and submarginal spots present, variable, sometimes confluent and covering nearly the whole wing. Expanse, 40 mm.

Habitat, Southern States, rare in New York and New England.

E. placentia *Smith & Abbott.*

1797—*Phalæna placentia* SMITH & ABBOTT, Lep. Ins. Ga., Vol. II, pl. 65.

var. **snowi** *Grote.*

1875—*Arctia snowi* GROTE, Can. Ent., Vol. VII, p. 197.
1878—*Arctia quadranotata* STRECKER, Proc. Dav. Acad. Sc, Vol. II, p. 271.

var. **flammea** *Neumœgen.*

1881—*Arctia flammea* NEUMŒGEN, Pap., Vol. I, p. 9.

Thorax and primaries black: secondaries red with normal discal and marginal spots, to all black. Abdomen red, with dorsal and lateral bands. On primaries, a discal flesh red spot (of band 3) or part of band 4 or traces of **w**-mark, all broken by veins.

Habitat, Southern States to Mississippi Valley.

GROUP APANTESIS *Walker.*

1855—*Apantesis* WALKER, Cat. Brit. Mus., pt. III, p. 331.

Synopsis of species.

Costal margin of primaries black . . . . . **nais.**
Costal margin yellow.
Abdomen rosy red, marks of primaries usually complete . **phalerata.**
Abdomen yellow, often largely black; marks partly absent . **vittata.**

E. nais *Drury.*

1773—*Noctua nais* DRURY, Ill. Ex. Ent., Vol. I, pl. 7, f. 3.
1781—*Bombyx cuneata* GOEZE, Ent. Betyr., Vol. III (3), p. 65.
1797—*Bombyx defloriana* MARTYN, Psyche, pl. 28. ff. 78—9.
1881—*Arctia ochreata* BUTLER, Ent. Mo. Mag., Vol. XVIII, p. 136.

Thorax normal, or more often collar immaculate. Abdomen ocher yellow with dorsal and lateral black bands widest centrally. Fore wings black, a stripe near costa and longitudinal band present; transverse posterior line and terminal **w**-mark also present, the former bent at right angles and usually its lower limb fused with the line on median vein. It does not extend below the longitudinal stripe. Markings often become obsolete from without inwards, the **w**-mark disappearing first. Secondaries pale ocher, rarely partly pinkish with double marginal row and one discal spot. Expanse, 25—30 mm.

Habitat, Atlantic States westward.

E. phalerata *Harris.*

1841—*Arctia phalerata* Harris, Ins. Mass., p. 274.
1881—*Arctia rhoda* Butler, Ent. Mo. Mag., Vol. XVIII. p. 136,
1881—*Arctia incompleta* Butler, Ann. Mag. N. H. (5). Vol. VIII. p. 311.

Thorax normal, abdomen red, rarely yellow, marked like *nais*. Fore wings as in *nais* except that the costal stripe reaches the costa and the **w**-mark is only very rarely at all incomplete. Secondaries pink in ♂, especially along abdominal border, rarely entirely ocherous; red in ♀; the black marks as in *nais*, but sometimes very small or absent.

Habitat, Atlantic States westward.

E. vittata *Fabricius.*

1787—*Bombyx vittata* Fabricius, Mant. Ins., Vol. II, p. 127.
1855—*Apantesis radians* Walker, Cat. Brit. Mus., pt. III, p. 632.
1863—*Arctia decorata* Saunders, Proc. Ent. Soc. Phil., Vol. II, p. 60.
1864—*Aloa colorata* Walker, Cat. Brit. Mus.. pt. XXXI, p. 301.

Marked like *nais* except that the costal band reaches the costa. The black abdominal bands are broad and frequently cover most of the abdomen. Hind wings ocher or red, the spots as in *nais* but often form a complete broad black border. Expanse, 30—35 mm.

Habitat, Atlantic States.

Genus **Kodiosoma** *Stretch.*

1872—*Kodiosoma* Stretch. Zyg. and Bomb. N. A., Vol. I, p. 67.

Synopsis of species.

Secondaries black.
Abdomen yellow at tip . . . . . **nigra.**
Abdomen black throughout . . . . . **eavesii.**
Secondaries red at base . . . . . **tricolor.**
Secondaries yellow at base . . . . . **fulva.**

K. nigra *Stretch.*

1872—*K. nigra* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 68.

Black, thinly scaled, prothorax, anal tuft, costa of primaries and a faint oblique transverse band, yellow. Expanse, 22 mm.

Habitat, California [Stretch].

K. eavesii *Stretch.*

1872—*K. eavesii* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 69.

Black, wings translucent centrally. Prothorax, costal edge, and a faint or partly obsolete band, furcate toward costa; pale yellow. Expanse, 22 mm.

Habitat, Nevada, California.

K. tricolor *Stretch.*

1871—*K. tricolor* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 67.

Black; secondaries clear red except at margin. Prothorax, base of costa and a transverse band on primaries pale yellowish. Abdomen red above, black at tip. Expanse, 25 mm.

Habitat, Nevada [Stretch].

K. fulva *Stretch.*

1872 - *K. fulva* STRETCH, Zyg. and Bom. N. A., Vol. I, p. 67.

Black; secondaries pale buff for basal two-thirds. Prothorax, tip of abdomen, costal edge and a narrow, angulated, transverse band on primaries, pale buff. Expanse, 23 mm.

Habitat, California.

Genus **Parasemia** *Hübner.*

1822?—*Parasemia* HÜBNER, Verz. bek. Schmett., p. 121.
1828—*Nemeophila* STEPHENS, Ill. Brit. Ent. Haust., Vol. II, p. 12.
1865—*Eupsychoma* GROTE, Proc. Ent. Soc. Phil., Vol. IV, p. 317.

Synopsis of varcities.

Hind wings black and white.
A discal dot on fore wings . . . . . **petrosa.**
No discal dot . . . . . *var.* **geddesi.**
Hind wings black and yellow or reddish . . . . . *var* **modesta.**
Hind wings black.
A discal dot on fore wings . . . . . *var.* **geometrica**
No discal dot . . . . . *var.* **scudderi.**

P. petrosa *Walker.*

1855—*Nemeophila petrosa* WALKER, Cat. Brit. Mus., Vol. III, p. 626.

var. **geddesi** *Neumœgen.*

1884—*N. geddesi* NEUMŒGEN, Pap., Vol. III, p. 137.

var. **modesta** *Packard.*

1864—*Platarctia modesta* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 113.
1868—*Nemeophila caespitis* Grote & Robinson, Trans. Am. Ent. Soc., Vol. I, p. 337.
1868—*Nemeophila chicorii* Grote & Robinson, Trans. Am. Ent. Soc., Vol. I, p. 338.

var. **geometrica** *Grote.*

1865—*Eupsychoma geometrica* Grote, Proc. Ent. Soc. Phil., Vol. IV, p. 318.

var. **scudderii** *Packard.*

1864—*Platarctia scudderii* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 113.
1885—*Nemeophila selwynii* Hy. Edwards, Can. Ent., Vol. XVII, p. 65.

Black; collar, except black central dot, and base of costa, buff; a longitudinal band, oblique sub-apical band and discal dot with traces of another near apex, white or yellow, or absent. Secondaries white, red, or yellow, or partly or wholly black. Expanse, 35 mm.

Habitat, Mountains of Colorado and California to Canada and British Columbia.

Genus **Hypercompa** *Hübner.*

1805?—*Hypercompa* Hübner, Tentamen, p. 1.
1822—*Zoote* Hübner, Verz. bek. Schmett., p. 181.

H. caja *Linnæus.*

1758—*Bombyx caja* Linnæus, Syst. Nat., Vol. I, p. 500.

race **americana** *Harris.*

1841—*Arctia americana* Harris, Rep. Ins. Mass., p. 246.

race **utahensis** *Hy. Edwards.*

1887—*Eup. caja* var. *utahensis* Hy. Edwards, Ent. Amer., Vol. II, p. 166.

var. **transmontana** *Neumœgen & Dyar.*

1893—*H. caja* var. *transmontana* Neumœgen & Dyar, Ent. News, Vol. IV, p. 214.

race **opulenta** *Hy. Edwards.*

1881—*Euprepia opulenta* Hy. Edwards, Pap., Vol. I. p. 38.

Primaries and thorax dark brown with transverse anterior and transverse posterior and angular terminal white bands and two costal dots representing additional bands. A longitudinal band along submedian fold, often absent. Secondaries pale reddish to yellow with one or more discal and three large round submarginal blue-black spots. Abdomen reddish with dorsal black spots. Expanse, 55—65 mm.

Habitat, Europe and America.

The american forms differ in general from the European in lacking the longitudinal white band. The form *caja* with red secondaries inhabits the Pacific Northwest. Race *americana* inhabits the Northern Atlantic States. The race *utahensis*, from the Rocky Mountains region, differs in the broader white bands and yellow secondaries. It corresponds strictly to the form *wiskotti* Staud. from Asia Minor, differing in the character pointed out. The form *opulenta* from Alaska seems to be only a race of *caja* in which the white marks are enormously developed. The var. *transmontana* is more marked with white than *utahensis*, less so than *opulenta*.

Genus **Ectypia** *Clemens.*

1861—*Ectypia* CLEMENS, Proc. Acad. Sci. Phil. 1860, p. 529.

E. bivittata *Clemens.*

1861—*Ectypia bivittata* CLEMENS, Proc. Acad. Sci. Phil., 1860, p. 530.

1887—*Spilosoma nigroflava* GRAEF, Ent. Amer., Vol. III, p. 43.

White; patagia with luteous and black stripe. Abdomen with dorsal and lateral black spots and sub-dorsal orange yellow shade.

On primaries, a number of elongate black spots in three irregular rows; one spot on origin of vein 2 is somewhat arrow-shaped. Secondaries white. Expanse, 45 mm.

Habitat, Texas.

In this species the accessory cell may be absent as shown by the observation of Prof. J. B. Smith.

Family AGARISTIDÆ.

Synopsis of genera.

Veins 7—9 of primaries from a stalk at end of accessory cell.
- Antennæ of ♂ simple . . . . . **Seudyra.**
- Antennæ of ♂ pectinated . . . . . **Psychomorpha.**

Vein 7 from accessory cell; veins 8 and 9 stalked.
- Antennæ swollen before tip . . . . . **Alypia.**
- Antennæ filiform, serrate at pectinate.
  - Vein 5 of secondaries distinct.
    - Thorax not tufted.
      - Wings narrow; body slender . . . . . **Alypioides.**
      - Wings broad, square at apices; color black . . **Pseudalypia.**
      - Wings trigonate; body robust.
        - Antennæ short, serrate; an enormous trifid frontal plate-like process . . . . **Eupseudomorpha.**
        - Antennæ long. filiform; a frontal plate with lip-shaped outer margin . . . . . **Copidryas.**
    - Thorax with central scaled tuft.
      - Antennæ filiform . . . . . **Euthisanotia.**
      - Antennæ pectinated . . . . . **Ciris.**
      - Vein 5 weak or absent . . . . **(Acherdoa in Liparidæ).**

Genus **Seudyra** *Stretch.*

1875—*Seudyra* Stretch, Cist. Ent., Vol. II, p. 19.
1882—*Fenaria* Grote, Papilio, Vol. II, p. 132; 1892—Kirby, Cat. Lep. Het., Vol. I, p. 39.

S. sabulosa *Felder.*

1874—*Agarista sabulosa* Felder, Reise der Novara, Vol. II, pt. 2, pl. CVII, f. 11.
1874—*Eusemia ? sabulosa* Boisduval, Rev. Zool., Vol. II, (3), p. 106.
1892—*Metagarista ? sabulosa* Kirby, Cal. Lep. Het., Vol. I, p. 41.
1882—*Fenaria sevorsa* Grote, Papilio, Vol. II, p. 132.
1882—*Phœgorista sevorsa* Grote, Papilio, Vol. II, p. 189; 1883—Can. Ent., Vol. XV, p. 5.

Thorax reddish brown, with gray hairs. Fore wings reddish brown, uneven, shaded with blackish centrally. A reniform and orbicular discal dot outlined in dark brown. Beyond the former, a large sordid white space, showing faintly a narrow, arcuate, slightly waved, transverse-posterior line. Subterminal line blackish, undulate, obscure. Secondaries bright ocher yellow with a moderately broad, very even black border all around the outer margin. Abdomen smooth gray. Expanse, 27 mm.

Habitat, Arizona, California.

Genus **Psychomorpha** *Harris.*

1839—*Psychomorpha* Harris, Amer. Journ. Sci., Vol. XXXVI, p. 319.

P. epimenis *Drury.*

1780—*Noctua epimenis* Drury, Ill. Ex. Ent., Vol. III, pl. 29, f. 2.

Black, sprinkled with blue scales. A large pale yellow patch on primaries covering the space from costa to near internal angle, indented at the end of the cell by the black reniform spot which, together with the orbicular one, are defined from the ground by the absence of blue scales. A large, ovate, submarginal, reddish patch on secondaries. Expanse, 20 mm.

Habitat, Atlantic States.

Genus **Alypia** *Hübner.*

1825—*Alypia* Hübner, Verz. bek. Schmett., p. 351.
1873—*Androloma* Grote, Bull. Buff. Soc., Vol. I, p. 30.

Synopsis of species.

Primaries with three yellow patches.
  Spots divided by black veins.
    Tibiæ of fore legs black . . . . . **ridingsii.**
    Tibiæ of fore legs orange.
      Spots on secondaries white.

Outer spot on primaries narrow . . . . . **mac-cullochii.**
Outer spot on primaries broad, ovate . . . . . *race* **lorquinii.**
Spots on secondaries yellow . . . . . **similis.**
Spots not divided by the veins.
Four patches, the outer spot divided . . . . . **mariposa.**
Three patches, outer spot complete, lunate . . . *var.* **lunata.**
Primaries with two patches.
Secondaries with two spots.
Spots of primaries yellow, of secondaries white.
Without distinct costal enlargement on ♂ primaries.
Spots well rounded.
Basal spot of secondaries large, extensive . . **octomaculata.**
Basal spot small, rounded . . . . *var.* **albomaculata.**
Spots elongate, resembling transverse bands . . . **wittfeldii.**
With a distinct costal enlargement in ♂ . . . . **disparata.**
Spots all yellow . . . . . **dipsaci.**
Spots all white . . . . . **brannani.**
Secondaries with one spot, or rarely traces of a second . . . **langtonii.**

A. ridingsii *Grote.*

1864—*Alypia ridingsii* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 521.

Black, without costal swelling. Collar yellow at the sides. Fore tibiæ black, middle ones orange. Three yellow spots on primaries and two on secondaries, as in *mac-cullochii;* variable in size from small and well separated to large or even confluent. Expanse, 30 mm.

Habitat, Rocky Mountain region and mountnins of California.

A. mac-cullochii *Kirby.*

1837—*Alypia mac-cullochii* KIRBY. Faun. Bor. Amer., Vol. IV, p. 301.

race lorquinii *Grote & Robinson.*

1868—*Alypia lorquinii* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 328.

Black. Costa of ♂ with a subhyaline enlargement. Fore and middle tibiæ orange. A basal triangular, round, discal spot and outer ovate yellow patch on primaries, divided by the veins. Two white patches on secondaries, separated by a large black discal dot, divided by the black veins. Patagia and two dots on collar covered by yellowish hairs. Expanse, 25 mm.

Habitat, Canada, Rocky Mountains.

A. similis *Stretch.*

1872—*Alypia similis* STRETCH, Zyg. and Bomb. N. A., p. 14.
1874—*Alypia edwardsii* BOISDUVAL, Rev. Zool. (3), Vol. II, p. 63.

var. conjuncta *Hy. Edwards.*

1883—*Alypia similis* var. *conjuncta* HY. EDWARDS, Pap., Vol. III, p. 34.

Closely similar to race *lorquinii*, but the spots larger, and those on secondaries yellow. Rarely the spots on primaries become partly confluent (var. *conjuncta*).

Habitat, California.

A. mariposa *Grote & Robinson.*

1868—*Alypia mariposa* Grote & Robinson, Trans. Am. Ent. Soc., Vol. I, p. 329.

var. **lunata** *Stretch.*

1872—*Alypia lunata* Stretch, Zyg. and Bomb. N. A., p. 15.

Black; collar yellow at the sides; tibiæ as in *ridingsii*. Fore yellow spots on primaries, the outer two before apex and internal angle respectively and sometimes united (var. *lunata*). Secondaris with a discal dot and outer yellow band, the latter obscurely cut by black veins. Expanse, 35 mm.

Habitat, California.

In this species, veins 7 to 9 arise from a short stalk from accessory cell.

A. octomaculata *Fabricius.*

1775—*Sesia octomaculata* Fabricius, Syst. Ent., p. 830.
1791—*Zygaena bimaculata* Gmelin, Syst. Nat., Vol. I (5), p. 2398.
1825—*Alypia quadriguttalis* Hübner, Verz. bek. Schmett., p. 351.
1887—*Alypia matuta* Hy. Edwards, Pap., Vol. III, p. 33.

var. **albomaculata** *Stoll.*

1782—*Noctua albomaculata* Stoll, Pap. Ex. IV, pl. 345, f. C.
1810—‖*Alypia octomaculalis* Hübner, Zutr. Ex. Schmett., Vol I, p. 22, ff. 119—20.
1825—‖*Agarista octomaculata* Latreille, Encycl. Méth., Vol. IX, p. 803.

Black, patagia and central dot of collar yellow, fore and middle tibiæ orange. Two rounded yellow spots on primaries and two white ones on secondaries, the basal one much enlarged and reaching near to base of wing, or small and rounded (var. *albomaculata*). Expanse, 30 mm.

Habitat, Atlantic States.

A. wittfeldii *Hy. Edwards.*

1883—*Alypia wittfeldii* Hy. Edwards, Pap., Vol. III, p. 34.

Black; fore and middle tibiæ orange red, patagia yellow; two elongate, yellow, transverse patches on primaries, reaching from near margin to near costa, alternating with three patches of metallic blue scales. Two white spots on secondaries, slightly elongated transversely. Expanse, 35 mm.

Habitat, Florida.

A. disparata *Hy. Edwards.*

1884—*Alypia disparata* HY. EDWARDS, Pap., Vol. IV, p. 13.
1887—*Alypia gracilenta* GRAEF, Ent. Amer., Vol. III, p. 41.
1892—*Alypia desperata* KIRBY, Cat. Lep. Het., Vol. I, p. 35.

More slender than *wittfeldii*, with narrower, more pointed primaries. Costal margin distinctly swollen and sub-hyaline. The markings are like *wittfeldii*, but the spots are more rounded as in *var. albomaculata*. Expanse, 35—38 mm.

Habitat, Texas, Mexico.

A. dipsaci *Grote & Robinson.*

1868—*Alypia dipsaci* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 326.

Black; patagia pale yellow; anterior and middle tibiæ orange. Two yellow rounded spots on each wing. Expanse, 28 mm.

Habitat, California.

A. brannani *Stretch.*

1872—*Alypia brannani* STRETCH, Zyg. and Bomb. N. A., Vol. I, p. 8.

Black; patagia yellow, costa concave as in *ridingsii*. Two white rounded spots on each wing. Expanse, 33 mm.

Habitat, Sierra Nevada of California.

A. langtonii *Couper.*

1865—*Alypia langtonii* COUPER, Can. Nat. (2), Vol. II, p. 64.
1868—*Alypia sacramenti* GROTE & ROBINSON, Trans. Am. Ent. Soc., Vol. I, p. 327.
1884—*Alypia hudsonica* HY. EDWARDS, Pap., Vol. IV, p. 43.

Black; anterior and middle tibiæ orange, patagia yellow. Two oval or rounded triangular spots on primaries and a single one on secondaries, pale yellow, or sometimes whitish, with a patch of metallic blue scales between them, more or less distinct. Sometimes traces of a second sub-basal spot on secondaries. Expanse, 35 mm.

Habitat, Canada, mountains of New England and New York and the Pacific coast.

Genus **Alypioides** *Grote.*

1883—*Alypioides* GROTE, Trans. Kansas Soc., Vol. VIII, p. 46.

A. crescens *Walker.*

1856—*Eusemia? crescens* WALKER, Cat. Brit. Mus., pt. VII, p. 1774.
1869—*Agarista grotei* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XII, p. 70.
1883—*Alypioides flavilinguis* GROTE, Trans. Kans. Soc., Vol. VIII, p. 46.

Black; tongue orange, collar spotted with yellow; two yellow spots in the cell and a large ovate one beyond, alternating with patches of blue scales. Secondaries with a single, rounded, yellow patch. Expanse, 40 mm.

Habitat, California to New Mexico.

A. binaculata H.-S. mtk. 172.

Genus **Pseudalypia** *Hy. Edwards.*

1874—*Pseudalypia* Hy. Edwards, Proc. Cal. Acad. Sci., Vol. V, p. 101.

P. crotchii *Hy. Edwards.*

1874—Hy. Edwards, Proc. Cal. Acad. Sci., Vol. V, p. 101.

var. **atrata** *Hy. Edwards.*

1884—Hy. Edwards, Papilio, Vol. IV, p. 121.

Head, thorax, patagia and abdomen deep glossy black, with a slight bronze tinge. Collar, base of palpi and abdominal tuft, golden orange. Palpi, golden orange beneath. Primaries, glossy black, a greenish metallic tinge. The costa for about three-fourths of its length and a narrow, slightly curved band crossing the wing beyond the middle, cream white. Apical edge of fringe white. Secondaries dull black with a slightly brownish hue Fringe cream white except toward anal angle where it is black. Under side similar to upper with the band of primaries more broadly defined, and with a whitish tinge toward their base. Expanse, 22 mm. The variety is entirely brassy black except costa, which is narrowly cream white.

Habitat, Southern California.

Genus **Eupseudomorpha** *Dyar.*

1893—*Eupseudomorpha* Dyar, Can. Ent., Vol. XXV, p. 28.
1880—‖*Edwardsia* Neumœgen, Can. Ent., Vol. XII, p. 67.
1892—‖*Eudwardsia* Kirby, Cat. Lep. Het., Vol. I, p. 36.

E. brillians *Neumœgen.*

1880—*Edwardsia brillians* Neumœgen, Can. Ent., Vol. XII, p. 67.

Black; patagia and collar pale yellow centrally. On primaries, are an ovate orbicular and reniform spot, ocher yellow. A subterminal brick-red band preceded by a bluish white one. Three white marks alternating with the discal spots and adapted to their shape: two bluish white marks in interspace between vein 1 and median vein, divided by an oblique black line. Fringe white. Secondaries immaculate. Below, on primaries, part of the marks are reproduced in ocher. Expanse, 35 mm.

Habitat, Texas.

Genus **Copidryas** *Grote.*

1876—*Copidryas* GROTE, Can. Ent., Vol. VIII, p. 99.

C. gloveri *Grote & Robinson.*

1868—*Euschirrhopterus gloveri* GROTE & ROBINSON, Trans. Am. Ent. Soc. Phil., Vol. II, p. 185.

Primaries white; thorax, a narrow costal border reaching nearly to apex, and a very broad border along outer and internal margins, dark gray. Reniform and orbicular spots gray, outlined in black: a row of black terminal dots. Secondaries ocher yellow with outer gray border and terminal black line; fringes pale. Expanse, 35 mm.

Habitat, Texas.

Genus **Euthisanotia** *Hübner.*

1825—*Euthisanotia* HÜBNER, Zutr. Ex. Schmett., Vol. III, p. 12.
1836—*Eudryas* BOISDUVAL, Spéc. gén. Lép.. Vol. I, pl. 14, f. 9.

Synopsis of species.

Secondaries with complete marginal band.
No discal dot on secondaries . . . . . **unio.**
A distinct black discal dot above . . . . . **brevipennis.**
Secondaries with a partial marginal band, absent at apex, . . . **grata.**
Secondaries without a marginal band . . . *var.* **sanctæ-johannis.**

E. unio *Hübner.*

1825—*Euthisanotia unio* HÜBNER, Zutr. Ex. Schmett., Vol. III, p. 12.

White; head and center of thorax with a tuft of curled black scales. A dark purplish costal border two-thirds of length into, which are fused the partly obsolete reniform and orbicular spots. A broad, outer, brown border, edged within narrowly with olive green, and containing a neatly waved white line, shading inwards and enclosing some darker patches before the white line. On internal margin a triangular olive patch contiguous to the outer border and scattered with bluish scales. Secondaries yellow with marginal light brown border, neatly marked with dark brown narrow lunules. Expanse, 35 mm.

Habitat, Atlantic States westward.

E. brevipennis *Stretch.*

1874—*Eudryas brevipennis* Stretch, Zyg. and Bomb. N. A., Vol. I, p. 151.

Close to *unio*, but the discal dots more distinct and the markings in the marginal band confused. On secondaries, a distinct black discal dot, the brown border evenly clouded, without any distinct marks. Expanse, 30 mm.

Habitat, California.

E. grata *Fabricius.*

1793—*Bombyx grata* Fabricius, Ent. Syst., Vol. III, p. 457.
1874—*Eudryas assimilis* Boisduval, Rev. Zool. (3), Vol. II, p. 59.

var. **sanctæ-johannis** *Walker.*

1856—*Eudryas stæ. johannis* Walker, Cat. Brit. Mus., pt. IX, p. 144.

Larger than *unio*, the marking all very dark brown, with bluish white, indistinctly geminate, subterminal line on primaries. Triangular patch on internal margin large, its olive border spreading toward the centre of the wing (occasionally largely obscuring the white ground color, var. *sanctæ-johannis* [*?*]). Secondaries yellow, the brown marginal band fading out before apex, marked with an obscure pale bluish line. Expanse, 50 mm.

Habitat, Atlantic States westward.

Genus **Ciris** *Grote.*

1863– *Ciris* Grote, Proc. Ent. Soc. Phil., Vol. II, p. 65.

C. wilsonii *Grote.*

1863—*Ciris wilsonii* Grote, Proc. Ent. Soc. Phil., Vol. II, p. 65.

Snow white; head, collar, and centre of thorax, metallic blue-brown; an olive green costal shade fused to a reniform and discal spot. An outer border of purplish brown containing a neatly undulate, irregularly geminate, terminal line and bordered within with olive green. This tint obtains along internal margin, ending in a projection upward near base of wing. On secondaries, a deep brown patch at anal angle. Expanse, 45 mm,

Habitat, Texas.

Family PERICOPIDÆ.

Synopsis of genera.

Accessory cell present . . . . . **Daritis.**
No accessory cell.
Veins 7 – 10 of primaries stalked from apex of cell . . **Composia.**
Vein 10 from the sub-costal . . . . . **Gnophæla.**

Genus **Daritis** *Walker.*

1855—*Daritis* WALKER, Cat. Lep. Brit. Mus., pt. III, p. 618.
1870—*Dorimenia* BOISDUVAL, Lep. Guat., p. 98; 1892—*Kirby*, Cat. Lep. Het., Vol. I, p. 186.

D. thetis *Klug.*

1836—*Euprepia thetis* KLUG, Neue Schmett., p. 6, ff. 12.

var. **howardi** *Hy. Edwards.*

1887—*Daritis thetis* var. *howardi* HY. EDWARDS, Ent. Amer., Vol. II, p. 165.

Thorax black, with pale yellow triangular mark on patagia. Abdomen brick red above with dorsal black line. Primaries black with pale yellow discal mark and longitudinal band from base sending three branches to internal angle, middle of outer margin, and costa before apex respectively, all divided by the black veins. Secondaries ocher, with red border enclosing intervenular blue spots: all the markings bordered with black and separated by black veins. A large black discal spot. Expanse, 95 mm.

Habitat, New Mexico.

Genus **Composia** *Hübner.*

1822—*Composia* HÜBNER, Verz. bek. Schmett., p. 179.
1870—*Cocastra* BOISDUVAL, Lep. Guat., p. 88.

C. fidellissima *Herrich-Schäffer.*

1866—HERRICH-SCHÆFFER, Corr. Blat. Regensb., Vol. XX, p. 131; 1890—DYAR, Ent. News., Vol. I, p. 105; 1890—FRENCH, Ent. News., Vol. I, p. 153 (as *C. olympia*); 1892—KIRBY, Cat. Lep. Het., Vol I, p. 190.

Black, with a strong blue reflection in the basal and outer part of cell of fore wing and basal two-thirds of hind wing. A bright red patch on base of costa, trisected by two black spots. A row of unequal rounded white spots border both wings outwardly, supplemented by two abbreviated rows, running from the costal edge of fore wing, obliquely outward. There are several small whitish dots on the thorax, and the abdomen is shining blue above. Expanse, 55 mm.

Habitat, Cuba, Florida.

Genus **Gnophæla** *Walker.*

1854—*Gnophæla* Walker, Cat. Brit. Mus., pt. II, p. 330.
1863—*Omoiala* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. II, p. 334.
1865—*Callalucia* Grote, Proc. Ent. Soc. Phil., Vol. IV, p. 315.

Synopsis of species.

Hind wings largely pale . . . . . **vermiculata.**
Hind wings with moderate pale spots.
Spots whitish, elongate ; wings narrow . . . . . *var.* **discreta.**
Spots pale yellow, abbreviated . . . . . **latipennis.**
Hind wings black . . . . . **clappiana.**

G. vermiculata *Grote & Robinson.*

1863—*Omoiala vermiculata* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. II, p. 334.
1881—*Gnophæla continua* Hy. Edwards, Pap., Vol. I, p. 80.

var. discreta *Stretch.*

1878—*Gnophæla hopfferi* var. *discreta* Stretch, Surv. W. 100th Mer. Wheeler, p. 802.
1884—*Gnophæla arizona* French, Pap., Vol. IV. p. 20.
1885—*Gnophæla morrisoni* Druce, Biol. Centr. Amer. Lep. Het., Vol. I, p. 116, pl. 12, f. 7.

Black, with the whole central area of both wings, except the veins and a large discal dot, very pale yellow. The discal spot may extend down obliquely to internal angle, or the basal half of the cell may be filled in with black (var. *discreta*). Expanse, 45—50 mm.

Habitat, Rocky Mountain Region to Mexico ; Pacific North West.

G. latipennis *Boisduval.*

1852—*Glaucopis latipennis* Boisduval, Ann. Soc. Ent. Fr. (2), Vol. X, p. 320.
1868—*G. hopfferi* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 332.

Black ; sides of collar and chest orange. On fore wing are three or four sub-apical intervenular pale yellow spots, and three larger ones on the disk, which are separated only by the median vein and vein 2. Secondaries similar, the sub-apical spots two in number, and the middle of the three discal ones much reduced in size. Expanse, 50 mm.

Habitat, Pacific States to Mexico.

G. clappiana *Holland.*

1891—*Gnophæla clappiana* Holland, Ent. News., Vol. II, p. 156.

Black, with a quadrate pale yellow spot at end of cell and three small oval spots below apex; a minute white spot at base. Fringe of secondaries white.

Habitat, Colorado [Holland].

Family LIPARIDÆ.

Synopsis of genera.

Costa of primaries convex.
- Antennæ of ♂ pectinated to the tip.
  - Female wingless or with rudimentary wings . . . . **Notolophus.**
  - Female with well developed wings.
    - Vein 5 of secondaries distinct.
      - Accessory cell present.
        - Abdomen tufted at base with metallic scales . . . **Olene.**
        - Abdomen untufted . . . . . **Dasychira.**
      - No accessory cell . . . . . **Porthetria.**
    - Vein 5 of secondaries weak or absent . . . . **Acherdoa.**
- Antennæ of ♂ pectinated for the basal two-thirds only . . **Dyaria.**

Costa of primaries concave.
- Accessory cell present; veins 7—9 stalked . . . . . **Aon.**

Genus **Notolophus** *Germar.*

1812—*Notolophus* GERMAR, Syst. Gloss. Prodr., p. 35.
1866—*Micropterogyna* RAMBUR, Cat. Lép. Andalusie, p. 281 note.
1876—*Apterogynis* GUÉNÉE, Stat. Sci. d'Eure et Loire, p. 78.

Synopsis of species.

Secondaries with more or less of a red-brown tinge.
- Both wings red-brown.
  - Fore wings nearly unicolorous . . . . . **antiqua.**
  - Fore wings much paler centrally . . . . . *var.* **badia.**
- Fore wings only slightly reddish.
  - Secondaries reddish centrally.
    - Markings faint; size small . . . . . **vetusta.**
    - Markings distinct; larger . . . . . **gulosa.**
  - Secondaries with a very faint trace only of reddish . . . . **cana.**

Secondaries gray or blackish, without any red tint above or below.
- Wings dark, heavily marked often tinged with ocherous . . **definita.**
- Wings light gray, seldom heavily marked.
  - White spot near internal angle distinct . . . . **leucostigma.**
  - White spot obsolete, markings faint . . . . *var.* **obliviosa.**

N. antiqua *Linnæus.*

1758—*Bombyx antiqua* LINNÆUS, Syst. Nat., Vol. I, p. 503.
1865—*Orgyia nova* FITCH, Rep. Ins. N. Y., Vol. VIII, p. 193.

var. **badia** *Hy. Edwards.*

1874—*Orgyia badia* Hy. Eewards, Proc. Cal. Acad. Sci., Vol. V, p. 188.

♂ Rusty brown, with darker transverse anterior and transverse posterior and sub-terminal lines, the latter obscure, but a very distinct bright, white spot before internal angle. Reniform discal spot faintly outlined. In the variety *badia* the basal space and space from trans.-post. line to margin is heavily shaded with blackish brown. Expanse, 25—30 mm.

Habitat, Canada and Northern United States.

N. vetusta *Boisduval.*

1852—*Orgyia vetusta* Boisduval, Ann. Ent. Soc. France, Vol. X, p. 322.

Blackish brown or gray with a red tinge, the markings obscured. White spot present, but not very large. Secondaries blackish brown with a darker border. Expanse ♂, 20—25 mm.

Habitat, Coast region of California.

N. gulosa *Hy. Edwards.*

1881—*Orgyia gulosa* Hy. Edwards, Papilio, Vol. I, p. 61.
1893—*Orgyia gulosa* Dyar, Psyche, Vol. VI, p. 438.

Fore wings gray, slightly tinged with brown. Markings very distinct; reniform spot pale, outlined by a brown ring: veins indicated by dark scales. Secondaries reddish centrally with a blackish border. Expanse, 25 mm.

Habitat, Coast region of California.

N. cana *Hy. Edwards.*

1881—*Orgyia cana* Hy. Edwards, Papilio, Vol. I, p. 61.
1892—*Orgyia cana* Dyar, Psyche, Vol. VI, p. 203.

Smooth dark gray, the lines black broad, well defined. Reniform outlined in brown and filled in with yellowish. Subterminal line white, the white mark above internal angle small, crescent shaped, or obsolete. Secondaries blackish tinged with brown, uniformly colored.

Habitat, Sierra Nevada of California.

N. definita *Packard.*

1864—*Orgyia definita* Packard, Prot. Ent. Soc. Phil., Vol. III, p. 332.

Dark gray, often tinged with dull ocherous along internal margin and subterminal space; lines black, heavily marked; subterminal line whitish; white spot variable sometimes obsolete. Between transverse posterior and subterminal lines, there are usually a series of black longitudinal shades crossing the transverse

posterior line opposite the reniform. Secondaries uniformly blackish with a red tinge. The ♀ is uniformly sordid white.

Habitat, Northern Atlantic States.

N. leucostigma *Abbott & Smith.*

1797—*Phalæna leucostigma* ABBOTT & SMITH, Lep. Ins. Ga., Vol. II, pl. 79.
1832—*Cladophora leucographa* GEYER, Zutr. Ex. Schmett., Vol. IV, p. 33.
1856—*Orgyia intermedia* FITCH, 2d rept. nox. ins. N. Y.. p. 213.
1856—*Orgyia borealis* FITCH, 2d rept. nox. ins. N. Y., p. 213.

var. **obliviosa** *Hy. Edwards.*

1886—*Orgyia obliviosa* HY. EDWARDS, Ent. Amer.. Vol. II, p. 13.
1890—*Orgyia inornata* BEUTENMÜLLER*, Psyche, Vol. V. p. 300.

Pale slate gray ; markings moderate or obsolete, white spot well defined or absent. Secondaries uniformly brownish gray, varying in shade from pale to dark.

Habitat, Atlantic States westward.

Genus **Olene** *Hübner.*

1823—*Olene* HÜBNER, Zutr. Ex. Schmett., Vol. II, p. 19; 1883—MOORE, Lep. Ceylon, Vol. II, p. 95.
1855—*Nioda* WALKER, Cat. Brit. Mus., pt. V, p. 1069.
1855—*Rilia* WALKER, Cat. Brit. Mus., pt. V, p. 1075.
1864—*Parorgyia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 332.
1869—*Turriga* WALKER, Char. Lep. Het,, p. 15.

Synopsis of species.

Markings of primaries entirely brown, secondaries brownish. **cinnamomea.**
Markings black or partly so ; secondaries gray or blackish.
  Wings sparsely irrorate with black scales, lines distinct, especially t. p.
    No distinct white discal patch on primaries : dark shade beyond t. p. line not reaching to terminal line, fading out and ill defined outwardly with a whitish edge.
      A longitudinal black bar along s.-m. fold . . . . . **achatina;**
      This bar absent . . . . . *var.* **tephra.**
    A distinct white discal patch on primaries, and dark shade reaching to t. line, sharply defined outwardly, especially in a point between veins 6 and 7.
      Veins not distinctly black lined.
        Basal space gray and brown . . . . . **leucophæa.**
        Basal space with an ocherous patch . . . . *var.* **basiflava.**
      Veins black lined . . . . . *var.* **atrivenosa.**
  Wings densely irrorate with black, pulverulent, all the markings obscured, but discernible . . . . . **plagiata.**

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* The larva of this species described by me, is totally distinct from the well know *O. leucostigma* and not identical as considered by Mr. Dyar (Psyche, Vol. VI, p. 420). WM. BEUTENMULLER.

(TO BE CONTINUED.)

PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumœgen and Harrison G. Dyar.

(Continued from page 30.)

O. cinnamomea *Grote & Robinson.*

1866—*Parorgyia cinnamomea* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. VI, p. 6.

Cinnamon brown, markings all brown and rather obscure. Broken outline of reniform spot and terminal line black, pulverulent. Median space more or less whitish gray, the subterminal brown shade bordered outwardly by a whitish shade which becomes defined near internal angle. The peculiar brown shade is characteristic.

Habitat, Atlantic States.

O. achatina *Abbot & Smith.*

1797—*Phalæna achatina* Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 77.
1866—*Parorgyia parallela* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. VI, p. 5.

var. **tephra** *Hübner.*

1805?—*Dasychira vulgaris tephra* Hübner, Samml. Exot. Schmett., Vol. I.
1866—*Parorgyia obliquata* Grote & Robinson. Proc. Ent. Soc. Phil., Vol. VI, p. 4.

Fore wings ochraceous gray with white shade centrally around obsolete black ringed reniform. Basal, transverse anterior and transverse posterior lines black, irregular, sometimes partly absent. Between transverse posterior and subterminal lines a brown shade defined outwardly by the whitish subterminal line. Secondaries dull brownish with faint discal dot and outer band, or largely blackish. A black bar along submedian fold from base nearly to margin is present in the typical form. Expanse, 30—50 mm.

Habitat, Atlantic States to Texas and Mexico.

O. leucophæa *Abbot & Smith.*

1797—*Phalæna leucophæa* Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 78.
1866—*Parorgyia clintonii* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. VI, p. 3.

var. **basiflava** *Packard.*

1864—*Parorgyia basiflava* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 332.

var. **atrivenosa** *Palm.**

1893—*Parorgyia atrivenosa* PALM, Journ. N. Y. Ent. Soc., Vol. I, p. 21.

Differs from *achatina* in the character of the subterminal shading, which is blackish brown, sharply defined outwardly by a series of darker or concolorous dashes, the one between veins 6 and 7 reaching almost to margin of wing. Median space largely shaded with white. There is occasionally a longitudinal black bar as in *achatina.*

Habitat, Atlantic States southwestward.

O. plagiata *Walker.*

1855—*Acyphas plagiata* WALKER, Cat. Brit. Mus., pt. IV, p. 799
1856—*Dasychira atomaria* WALKER, Cat. Brit. Mns., pt. VII, p. 1739.

Nearly uniform ochraceous gray, irrorate with black scales, reniform outlined in black on a white ground. Markings essentially as in *leucophaea*, from which this species differs in the uniform markings, not contrasted, and the heavy irrorations.

Habitat, Northern N. Y. and N. E., Rocky Mountains, Canada and Pacific Northwest.

Genus **Porthetria** *Hübner.*†

1822?—*Porthetria* HÜBNER, Verz. bek. Schmett., p. 160.

P. dispar *Linnaeus.*

1758—*Bombyx dispar* LINNAEUS, Syst. Nat., Vol. I, p. 501, n. 27.

♂ Smoky brown, paler on primaries centrally beyond cell, with dark brown dentate transverse anterior and transverse posterior and subterminal lines: two discal dots, outer one lunate. Fringe spotted with dusky. Expanse, 25 mm.

♀ White, tip of abdomen brown. Lines on primaries as in the ♂, smoky brown with a central shade below the outer discal dot. Fringe spotted with brown. Antennæ black. Expanse, 45 mm.

Habitat, Medford, Massachusetts, and vicinity; Europe. [Introduced.]

Genus **Dasychira** *Hübner.*

1810—*Dasychira* HÜBNER, Tentamen, p. 1.

*I consider this a valid species and not a variety of *leucophæa.*-Wm. Beutenmüller.
†This name should be replaced by *Lymantria* Hübn. See Hampton, Moths of India, Vol. I, p. 459.—H. G. Dyar.

Synopsis of species.

Secondaries yellowish with black border . . . . . **rossii.**
Secondaries uniformly smoky blackish . . . . . **grœnlanidca.**

D. rossii *Curtis.*

1835—*Laria rossii* Curtis, 2d Voyage, Ross, App., p. 70.

Blackish gray, transverse anterior and transverse posterior lines and discal dot black, pulverulent, indistinct, the lines undulate. A dentate irregular subterminal line, faint between veins 1 and 2, becoming a large round black spot bordered outwardly by white, with which color all the lines are obscurely defined. Secondaries black, with a large central area pale sordid yellow. Expanse, 35 mm.

Habitat, Arctic regions.

D. grœnlandica *Homeyer.*

1874—*Dasychira grœnlandica* Homeyer, 2te Deutsche Nordpolarfahrt, Vol. II, p. 469.

1892—*Dasychira grœnlandica* Skinner & Mengel, Proc. Acad. Nat. Sci. Phil.

Smoky black, sub-diaphanous; primaries of ♂ with the veins marked in black; ♀ nearly devoid of markings. [Skinner & Mengel.]

Habitat, Greenland.

[Note. The following three genera, which may all be Noctuids, are included here until their proper relations are better known; since if looked for among the Bombyces, they fall into the present location in our synopsis of families.]

Genus **Acherdoa** *Walker.*

1865—*Acherdoa* Walker, Cat. Brit. Mus., pt. XXXII, p. 451.

1884—*Varina* Neumœgen, Papilio, Vol. IV, p. 94; 1892—Smith, Can. Ent., Vol. XXIV, p. 135; 1893—Packard, Can. Ent., Vol. XXV, p. 151.

A. ferraria *Walker.*

1865—*Acherdoa ferraria* Walker, Cat. Brit. Mus., pt. XXXII, p. 451.

1884—*Varina ornata* Neumœgen, Papilio, Vol. IV, p. 94.

Reddish brown, secondaries brownish black. Basal, transverse anterior and transverse posterior narrow black lines, the two latter with a broad distinct white edging on the lower half: between them the wing is deep brown with a black shade. A minute orbicular and larger eniform, pale brown discal spots, the latter bordered with white. A pale subterminal line, often obsolete superiorly, near internal angle defined by several large pulverulent black marks. A narrow terminal black line. Between basal and

transverse anterior lines, below median vein, a diffuse, rusty-brown patch. Expanse, 25 mm.

Habitat, Southern States.

Genus **Dyaria** *Neumœgen.*

1893—*Dyaria* NEUMŒGEN, Can. Ent., Vol. XXV, p. 213.

D. singularis *Neumœgen.*

1893—*Dyaria singularis* NEUMŒGEN, Can. Ent., Vol. XXV, p. 215.

Gray; thorax with distinct brown irrorations; abdomen hairy, brownish. Color of wings pale gray, slightly silvery. T. a. line narrow, black, arcuate, inclosing a grizzled black and brown basal space with an elevated tuft below median vein. Median space irrorate with black with a tuft in the cell. T. a. line arcuate outwardly over the sub-costal nervures, inwardly below; black, edged outwardly with sordid white, the upper curve filled in with blackish brown. A submarginal row of round spots, white outwardly, and terminal elongate marks. Secondaries similarly marked, rather less distinctly and without tufts. Expanse, 28 mm.

Habitat, Northern Atlantic States (?)

Genus **Aon** *Neumœgen.*

1893—*Aon* NEUMŒGEN, Ent. News, Vol. III, p. 258.

A. noctuiformis *Neumœgen.*

1893—*Aon noctuiformis* NEUMŒGEN, Ent. News, Vol. III, p. 258.

Primaries gray with black discal dot and black irrorations especially toward base. A dull reddish shade extending upward from internal margin. Subterminally and terminally the veins are indicated in black, with irregular black shadings on terminal third of wings, divided submarginally by a pale ocherous shade which spreads up from the internal angle, narrowing superiorly and cut by the black veins. In the interspace between veins 6 and 7, a pale gray shade. Secondaries pale whitish. Body parts gray. Expanse, 29 mm.

Habitat, Texas.

Family DREPANIDÆ.

Synopsis of genera.

Accessory cell either absent or very long and narrow.
No accessory cell; veins 7 and 8 of hind wings united outwardly **Eudeilinia.**
Accessory cell present; veins 7 and 8 free . . . . . **Oreta.**

Accessory cell present, broad, distinct.

Outer margin of primaries entire, falcate . . . **Platypteryx.**

Outer margin deeply excavate at the termination of the veins . **Falcaria.**

Genus **Eudeilinia** *Packard.**

1876—*Eudeilinia* Packard, Mono. Geom. Moths, U.S. Geol.Surv. (Hayden), Vol. X, p. 303.

E. herminiata *Guenée.*

1857—*Corycia herminiata* Guenée, Phal., Vol. II, p. 58.

1873—*Eudeilinia biseriata* Packard, 5th Rept. Peab. Acad., p. 68.

White; fore and middle legs blackish brown beneath. Both with t. a. and t. p. bands of indistinct smoky spots on the veins, the t. p. band broadly sinuate. Two discal dots on the under side of both wings. Expanse, 28 mm.

Habitat, Northern Atlantic States.

Genus **Oreta** *Walker.*

1855—*Oreta* Walker, Cat. Brit. Mus., pt. V, p. 1166.

1863—*Dryopteris* Grote, Proc. Ent. Soc. Phil., Vol. I, p. 346.

Synopsis of species.

Pale dull rose color, with yellow band . . . . . **rosea.**

Uniformly dull rose color with no yellow band . . . . . **irrorata.**

O. rosea *Walker.*

1855—*Drepana rosea* Walker, Cat. Brit. Mus., pt. V, p. 1164.

1856—*Cilix americana* Herrich-Schæffer, Ausser. Schmett., Vol. I, f. 470.

1862—*Platypteryx formula* Grote, Proc. Acad. Nat. Sci. Phil., 1862, p. 60.

var. **marginata** *Walker.*

1855—*Drepana marginata* Walker, Cat. Brit. Mus., pt. V, p. 1165.

Yellow, fore legs brick red; thorax, two-thirds of primaries and basal half of secondaries, pale brownish rose color, slightly strigose. A darker, more purplish, marginal border on primaries, darkest at apex, with two rounded spots at internal angle, and the apex of secondaries of the same color. Two minute white discal dots on primaries. Expanse, 25 mm.

In the var. *marginata*, the rose-color shading at the bases of the wings becomes very obscure, leaving them largely yellow except for the dark outer border.

Habitat, Northern Atlantic States.

O. irrorata *Packard.*

1864—*Dryopteris irrorata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 377.

* Prof. J. H. Comstock has very kindly called my attention to this genus. I find our species closely related to *Auzata* Wlk. (See Kirby, Cat. Lep. Het., Vol. I, p. 735.)—H. G. Dyar.

Dull rose color throughout, more reddish than *rosea*, with brown strigæ and irrorations. At t. a. and t. p. irregular dark line, the latter duplicated by a streak from apex. Secondaries with three faint transverse blackish lines. Expanse, 35 mm.

Habitat, Northern New York, New England, Canada.

Genus **Platypteryx** *Laspeyres.*

1803—*Platypteryx* LASPEYRES, Neue Schrift. Ges. Nat. Freunde Berl., Vol. IV, p. 29.

1822—‖*Drepana* HÜBNER, Verz. bek. Schmett., p. 149.

P. arcuata *Walker.*

1855—*Drepana arcuata* WALKER, Cat. Brit. Mus., Vol. V, p. 1164.

1862—*Platypteryx fabula* GROTE, Proc. Acad. Nat. Sci. Phil., p. 59.

dim. form **genicula** *Grote.*

1862—*Platypteryx genicula* GROTE, Proc. Acad. Nat. Sci. Phil., p. 59.

1834—?*Drepana fasciata* STEPHENS, Ill. Brit. Ent. Haust., Vol. IV, p. 8; 1856—WALKER, Cat. Brit. Mus., Vol. IV, p. 1163.

race **siculifer** *Packard.*

1872—*Drepana siculifer* PACKARD, Peab. Acad. Sci., Vol. IV, p. 87.

Pale ocherous or pale straw-yellow with two black discal dots and four narrow undulating bands beside a rusty-brownish one which is straight and runs to apex into a purplish cloud. Secondaries marked with similar undulating bands, most distinct on internal margin.

The form *genicula* is dark-yellow and less distinctly marked.

Habitat, Northern Atlantic States.

The race *siculifer* is larger and more distinctly marked.

Habitat, California and Pacific Northwest.

Genus **Falcaria** *Haworth.*

1809—*Falcaria* HAWORTH, Lep. Brit., Vol. II, p. 147.

1864—*Edapteryx* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 275.

F. bilineata *Packard.*

1864—*Edapteryx bilineata* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 376.

dim. form **levis** *Hudson.*

1893—*Prionia lævis* HUDSON, Can. Ent., Vol. XXV, p. 24.

Light yellowish; secondaries very pale. Primaries covered with brown striæ and crossed by two parallel, straight, brown lines. A minute brown discal dot. Outer margin faintly shaded with brown. This species is three brooded. The third brood, the form *levis*, lacks the strigæ.

Habitat, Northern Atlantic States.

Family PYROMORPHIDÆ.

Synopsis of genera.

Subcostal veins from cell, unbranched ; size small . . . **Acoloithus.**
Subcostal veins partly stalked or 8 and 9 approximate at origin.
  Wings broad, rounded.
    Costa very convex ; wing broad . . . . . **Pyromorpha.**
    Costa straight or nearly so, wings more elongate . . **Triprocris.**
  Wings very narrow, elongate . . . . . **Harrisina.**

Genus **Acoloithus** *Clemens.*

1861—*Acoloithus* Clemens, Proc. Acad. Nat. Sci. Phil., 1860, p. 539.

A. falsarius *Clemens.*

1861—*Acoloithus falsarius* Clemens, Proc. Acad. Nat. Sci. Phil., 1860, p. 540.
1864—*Harrisina sanborni* Packard, Proc. Essex Inst., Vol. IV, p. 32.

Entirely black, with very narrow reddish collar. Expanse, 18—20 mm.

Habitat, Atlantic States westward.

Genus **Pyromorpha** *Herrich-Schäffer.*

1854—*Pyromorpha* Herrich-Schæffer, Saml. Ausser. Schmett., Vol. I, f. 222.
1861—*Malthaca* Clemens, Proc. Acad. Nat. Sci. Phil , 1860, p. 540.

P. dimidiata *Herrich-Schäffer.*

1854—*Pyromorpha dimidiata* Herrich-Schæffer, Saml. Ausser. Schmett., Vol. I, f. 222.
1854—*Lycomorpha centralis* Walker, Cat. Brit. Mus., pt. II, p. 288.
1861—*Malthaca perlucidula* Clemens, Proc. Acad. Nat. Sci. Phil., 1860, p. 541.

Black, the wings translucent with a pale buff patch on basal half of primaries above vein 1 b. Expanse, 25 mm.

Habitat, Atlantic States.

Genus **Triprocris** *Grote.*

1873—*Triprocris* Grote, Bull. Buff. Soc., Vol. I, p. 35.

Synopsis of species.

Body ocher yellow . . . . . **fusca.**
Abdomen black dorsally.
  Body or wings more or less colored.
    Thorax black centrally and on patagia.

Primaries yellow, except along costa and outer margin . **rata.**
Primaries red except outer part of wing . . . **latercula.**
Thorax colored.
Head, thorax and most of primaries pinkish red . **constans.**
These parts ocher yellow . . . . . *var.* **sancta.**
Body and wings entirely black.
Black with metallic reflection . . . . . **smithsonianus.**
Brownish black, the veins prominent . . . . . **marteni.**

T. fusca *Hy. Edwards.*

1884—*Pyromorpha fusca* HY. EDWARDS, Papilio, Vol. IV, p. 43.

Thorax and abdomen ochraceous; head and wings black, the latter translucent. Expanse, 25 mm.

Habitat, Arizona.

T. rata *Hy. Edwards.*

1882—*Lycomorpha rata* HY. EDWARDS, Vol. II, p. 124.

Black; collar and lateral line on abdomen ochraceous. Primaries dark ocher with broad outer border (one-fourth of wing) and narrow costal edge and basal half of secondaries ocherous. Expanse, 18 mm.

Habitat, Arizona.

T. latercula *Hy. Edwards.*

1882—*Lycomorpha latercula* HY. EDWARDS, Papilio, Vol. II, p. 124.

Black; primaries light red, outer fourth black, this color produced narrowly half way to base along costa and internal margin. Costal edge of secondaries red. Expanse, 20 mm.

Habitat, Arizona.

T. constans *Hy. Edwards.*

1881—*Lycomorpha constans* HY. EDWARDS, Papilio, Vol. I, p. 81.

var. **sancta** *Neumœgen & Dyar.*

Head, collar and thorax pinkish red; abdomen black; primaries light orange or reddish with outer margin (one-fourth) black. Costal edge of secondaries narrowly orange. Expanse, 18 mm.

Habitat, Arizona.

The *var. sancta* has the orange parts ochraceous on both body and wings, the black border of primaries narrower.

Habitat, New Mexico.

T. smithsonianus *Clemens.*

1861—*Procris smithsonianus* CLEMENS, Proc. Acad. Nat. Sci. Phil., 1860, p. 540.

Entirely black; wings subtranslucent with slight bluish reflection. Expanse, 20 mm.

Habitat, Texas, New Mexico.

T. martenii *French.*

1884—*Triprocris martenii* French, Papilio, Vol. III, p. 191.

Brownish black, translucent; veins appearing distinctly, not obscured by the vestiture. Expanse, 24 mm.

Habitat, Arizona.

Genus **Harrisina** *Packard.*

1864—*Harrisina* Packard, Proc. Essex Inst., Vol. IV, p. 31.

Synopsis of species.

Collar black . . . . . **coracina.**
Collar red.
. Size medium (20—30 mm.); black, slightly metallic.
Collar orange . . . . . **americana.**
Collar, base of patagia and underside of head and breast orange . . . . . **australis.**
Larger (40 mm.) lustrous bluish green . . . . **metallica.**

H. coracina *Clemens.*

1861—*Aglaope coracina* Clemens, Proc. Acad. Nat. Sci. Phil., 1860, p. 539.
1887—*Harrisina nigrina* Græf. Ent. Amer., Vol. III, p. 41.

Entirely dull black, the abdomen with a bluish lustre. Expanse, 20 mm.

Habitat, Texas.

H. americana *Guérin.*

1829—44—*Aglaope americana* Guérin, Icon. R. Anim. Ins., p. 500, pl. 84 bis f. 11.
1872—*Harrisina texana* Stretch, Zyg. & Bomb. N. A., Vol. I, p. 181.

Black; the wings subtranslucent. Collar broadly orange red narrowing to a line on the under side. Expanse, 25 mm.

Habitat, Atlantic States westward to the Mississippi Valley and Texas.

H. australis *Stretch.*

1885—*Harrisina australis* Stretch, Ent. Amer., Vol. I, p. 102.

Greenish black; prothorax reddish orange, the color extending to the base of the patagia, under side of head, and breast. Expanse, 29 mm.

Habitat, Florida [Stretch].

H. metallica *Stretch.*

1885—*Harrisina metallica* STRETCH, Ent. Amer., Vol. I, p. 102.

Lustrous bluish green, with the wings a shade yellower than the abdomen. Prothorax orange, the color not extending to the head. Expanse, 40 mm.

Habitat, New Mexico [Stretch].

Family LIMACODIDÆ.

Synopsis of genera.

Primaries without accessory cell.
  Antennæ of ♂ pectinated on basal third.
    Vein 10 on a stalk from end of cell.
      Vein 10 given off before vein 7; sexes similar.
        Body parts robust . . . . . **Euclea.**
        Body parts more slender . . . . . **Monoleuca.**
      Vein 7 given off before vein 10.
        Vein 6 from upper part of cross vein; 9 and 10 forming wide angles . . . . . **Sisyrosea.**
        Vein 6 from middle of cross vein; 9 and 10 forming rather acute angles.
          Body parts robust; sexes very dissimilar . **Phobetron.**
          Body parts more slender; sexes alike (?) . . **Semyra.**
    Vein 10 from sub-costal on cell.
      Primaries 11-veined; vein 7 wanting . . . . . **Adoneta.**
      Primaries 12-veined.
        Internal margin of primaries straight . . . . **Parasa.**
        Internal margin slightly excavate . . . . . **Sibine.**
  Antennæ of ♂ simple, thickened at base.
    Vein 7 from near apex of cell, close to subcostal.
      Vein 10 from a stalk . . . . . **Eulimacodes.**
      Vein 10 from sub-costal . . . . . **Apoda.**
    Vein 7 from the cross-vein, as near to vein 6 as to the sub-costal.
      Vein 10 from a stalk . . . . . **Heterogenea.**
      Vein 10 from sub-costal.
        Apices of primaries rectangular . . . . **Tortricidia.**
        Apices rounded . . . . . **Packardia.**
Primaries with large accessory cell . . . (see *Zeuzera* etc. in Cossidæ).

Genus **Euclea** *Hübner.*

1822?—*Euclea* HÜBNER, Verz. Bek. Schmett., p. 149.

Synopsis of species and varieties.

Thorax brown.
  Green of primaries not covering cell.
    Spots rounded, discal dot round . . . . . **nana.**

Spots angular, discal dot elongated.
Wing dark brown.
Small basal and sub-apical green spots . . **delphinii.**
Basal patch large, bifid . . . . *var.* **querceti.**
Patches connected by a row of dots . *var.* **interjecta.**
Green forming a continuous band . . *var.* **viridiclava.**
Wing ferruginous brown, or paler . . *var.* **ferruginea.**
Green of primaries covering cell.
Sinus in the green patch filled in with rust-red.
Discal dot absent . . . . . **pænulata.**
Discal dot present . . . . . *var.* **elliotii.**
Sinus obsolescent, not discolored . . . . . **incisa.**
Thorax green . . . . . **indeterminа.**

E. nana *Dyar.*

1891—*Euclea nana* Dyar, Ent. News, Vol. II, p. 61; 1891—Trans. Am. Ent. Soc., Vol. XVIII, p. 150.

Deep reddish brown. A punctiform black discal dot. A large bifid green patch with silver border, resting on internal margin, well rounded and succeeded by a ferruginous patch divided by vein 1. A sub-apical small circular green patch. Secondaries paler. Expanse, 15 mm.

Habitat, Florida.

E. delphinii *Boisduval.*

1832—*Limacodes delphinii* Boisduval, CuvierAn.King. (Griffith), pl. ciii. f.6.
1832—*Limacodes strigata* Boisduval, Cuvier An. King. (Griffith), pl. ciii, f.7.
1854—*Limacodes quercicola* Herrich-Schæffer, Saml. Ausser. Schmett., f. 175.
1860—*Nochelia tardigrada* Clemens, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 160.
1891—*Euclea cippus* Dyar, Trans. Am. Ent. Soc., Vol. XVIII, p. 151.

var. querceti *Herrich-Schäffer.*

1854—*Limacodes querceti* Herrich-Schæffer, Saml. Ausser. Schmett., f.174
1864—*Euclea bifida* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 338.

var. interjecta *Dyar.*

1891—*Euclea cippus* var. *interjecta* Dyar, Ent. News, Vol. II, p. 61.

var. viridiclava *Walker.*

1855—*Euclea viridiclava* Walker, Cat. Brit. Mus., Vol. V, p. 1154.
1864—*Euclea monitor* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 337.

var. ferruginea *Packard.*

1864—*Euclea ferruginea* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 337.

Deep reddish brown with oval discal dot. A small triangular sub- basal green patch separated by a silvery line from a larger

ferruginous patch. A minute triangular sub-apical green dot also succeeded by ferruginous. Expanse, 17—22 mm.

Habitat, Atlantic States to Canada and westward.

var. querceti.—The basal patch throws out a green line over the ferruginous patch.

var. interjecta.—The end of this green line is connected with the sub-apical dot by a row of additional dots.

var. viridiclava.—The green marks fused into a continuous band.

var. ferruginea.—Differs only in the ground color which is paler, being less brown and more ferruginous or ocherous.

Habitat, Atlantic States.

E. pænulata *Clemens.*

1860—*Empretia pænulata* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 159.

var. **elliottii** *Pearsall.*

1887—*Euclea elliottii* PEARSALL, Ent. Amer., Vol. II, p. 209.

Differs from *delphinii* only in that the green coloration covers the discal cell, extending to the base of the wing, and forming a large triangular indented patch as in *incisa*. The black discal dot is frequently present.

Habitat, Northern Atlantic States westward.

E. incisa *Harvey.*

1876—*Parasa incisa* HARVEY, Can. Ent., Vol. VIII, p. 5.

Thorax and primaries dark wood-brown except for a large green patch covering most of primaries, slightly indented above internal angle. Abdomen and secondaries pale stramineous, with fringe brownish. Expanse, 18—25 mm.

Habitat, Texas.

E. indetermina *Boisduval.*

1832—*Limacodes indetermina* BOISDUVAL, Cuvier An. King. (Griffith), pl. 103, f. 8.

~~1864—*Limacodes viridis* REAKIRT, Proc. Ent. Soc. Phil., Vol. III, p. 251.~~

1864—*Callochlora vernata* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 339.

Thorax green, abdomen ocherous brown. Primaries crossed by a very broad green band which reaches base at internal margin leaving a triangular space at costa and terminal space blackish wood-brown, with blackish shade centrally on external margin. Secondaries ocherous brown, pale at base.

Habitat, Atlantic States.

Genus **Monoleuca** *Grote & Robinson.*

1869 - *Monoleuca* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 187.

Synopsis of species.

Transverse band upright.
  Band white.
    Band narrow ; precided by a ferruginous shade . . **subdentosa.**
    Band wider ; wing concolorous . . . . . **semifascia.**
  Band yellow . . . . . **sulfurea.**
Transverse band oblique . . . . . **obliqua.**

M. subdentosa *Dyar.*

1891—*Monoleuca subdentosa* Dyar, Trans. Am. Ent. Soc., Vol. XVIII, p. 156.

Brown, secondaries paler. Half band on centre of internal margin narrow, twice regularly undulate, preceded by a brighter brown shade.

Habitat, Florida.

M. semifacia *Walker.*

1855—*Limacodes semifascia* Walker, Cat. Brit. Mus., pt. V, p. 1151.

Uniform deep brown ; secondaries paler. The white half band is straight near internal margin but becomes broadened and irregularly waved at the middle of the wing.

Habitat, Southern States to Texas.

M. sulfurea *Grote.*

1880—*Monoleuca sulphurea* Grote, North Am. Ent., Vol. 1, p. 60.

Uniform brown ; the half band reaches median vein ; straight, with minute dentose projections, silvery white with a slight yellow tinge.

Habitat, Florida.

M. obliqua *Hy. Edwards.*

1886—*Monoleuca obliqua* Hy. Edwards, Ent. Amer., Vol. II, p. 10.

Uniform brown, the silvery white line very oblique, running almost to base. ♂ antennæ very shortly pectinated and only for basal third. Secondaries much paler than fore wings.

Habitat, Florida.

Genus **Sisyrosea** *Grote.*

1876—*Sisyrosea* Grote, Can. Ent., Vol. VIII, p. 112.
1864—‖*Isa* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 347 ; 1891—Dyar, Ent. News, Vol. II, p. 156.
1892—*Sosiosa* Kirby, Cat. Lep. Het., Vol. I, p. 551.

Synopsis of species.

Wings without distinct lines . . . . . **inornata.**
Two transverse parallel dark lines . . . . . **nasoni.**

S. inornata *Grote & Robinson.*

1867—*Limacodes inornata* GROTE & ROBINSON, Ann. Lyc. N. Y., Vol. VIII, p. 372.

♂ Flesh brown centrally on primaries, shaded broadly at base and external margin with rusty-brown and purplish. Hind wings chocolate brown. ♀ entirely flesh-brown, slightly chocolate tinted especially on secondaries, showing hardly a trace of the shading of the ♂. Expanse, 15—20 mm.

Habitat, Northern Atlantic States.

S. nasoni *Grote.*

1876—*Sisyrosea nasoni* GROTE, Can. Ent., Vol. VIII, p. 112.
1882—*Limacodes rude* HY. EDWARDS, Papilio, Vol. II, p. 12.

Pale brownish; primaries with two oblique parallel dark brown lines, the outer sub-terminal, both faintly pale bordered outwardly. Expanse, 25—32 mm.

Habitat, Southern States.

Genus **Phobetron** *Hübner.*

1827?—*Phobetron* HÜBNER, Verz. bek. Schmett., p. 398.
1841—*Ecnomidea* WESTWOOD, Nat. Lib. Ex. Moths, p. 183.

P. pithecium *Abbot & Smith.*

1797—*Phalæna pithecium* ABBOT & SMITH, Lep. Ins. Ga., Vol. II, pl. 74.
1827—*Phobetron abbotana* HÜBNER, Verz. bek. Schmett., p. 398.
1864—*Thyridopteryx nigricans* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 350.
1864—*Limacodes hyalinus* WALSH, Proc. Bost. Soc. N. H., Vol. IX, p. 299.
1864—*Limacodes? tetradactylus* WALSH, Proc. Bost. Soc. N. H., Vol. IX, p. 300.

♂ Black, the tibiæ of middle legs with straw-yellow hairs. Wings smoky hyaline with black borders, broad on anal margin of secondaries. Thorax tufted with black and brown; a blackish discal dot on primaries.

♀ Fore wings opaque, wood-brown, shaded over with black, especially at base and apex. Three transverse brown-black bands, basal, median, and transverse posterior, the first two sometimes obsolete, the outer dentate inwardly, appearing as if produced into contiguous finger shaped processes, into which a blackish median shading extends. An obscure discal dot either pale or blackish. Fringe deep brown. Secondaries blackish; a terminal wood-brown shade. Expanse, 17—25 mm.

Habitat, Atlantic States westward.

Genus **Semyra** *Walker.*

1855—*Semyra* Walker, Cat. Brit. Mus., pt. V, p. 1130.

S. beutenmuelleri *Hy. Edwards.*

1887—*Limacodes beutenmuelleri* Hy. Edwards, Can. Ent., Vol. XIX, p. 145.

Squammation and aspect of ♀ *Phobetron pithecium.* Primaries deep-brown, irrorate with bluish scales, with irregular patches of pale ocherous at middle of costa, beyond cell and along internal margin, these spots scarcely confluent. The apex, to middle of outer margin, pale ocherous. Secondaries blackish. Thorax with the colors of primaries intermixed; abdomen brown. Expanse, 22 mm. ♂ unknown.

Habitat, Florida.

Genus **Adoneta** *Clemens.*

1860—*Adoneta* Clemens, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 158.

Synopsis of species.

Fore wings brown, shaded with blackish and gray.
- Moderate in size, 18—20 mm., slightly shaded . . . . **spinuloides.**
- Very small, 14—15 mm., darkly shaded . . . . . **pygmæa.**

Fore wings quite uniform, not shaded . . . . . **leucosigma.**

A. spinuloides *Herrich-Schäffer.*

1854—*Limacodes spinuloides* Herrich-Schæffer, Saml. Ausser. Schmett., Vol. I, ff. 187—8.

1860—*Adoneta voluta* Clemens, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 158.

1865—*Limacodes ferrigera* Walker, Cat. Brit. Mus., pt. XXXII, p. 486.

Primaries chocolate brown with oval black discal spot and large terminal spots; a sub-basal and sub-apical narrow transverse white streak, on internal margin and costa respectively, the sub-apical one curved and the two connected by an arcuate row of black dots. Within these lines, the wing is shaded with whitish and black, and in some specimens, these shades prevail sub-terminally also. Secondaries pale brown. Expanse, 18—20 mm.

Habitat, Atlantic States.

A. pygmæa *Grote & Robinson.*

1868—*Adoneta pygmæa* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 189.

Primaries brownish or wholly suffused with blackish with white linear marks as in *spinuloides.* No terminal line. Expanse, 14—15 mm.

Habitat, Texas.

A. leucosigma *Packard.*

1864—*Cyclopteryx leucosigma* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 345.

Cinnamon brown with white marks and a curved row of black dots as in *spinuloides*, but without whitish and black shadings. A dark linear discal spot. Expanse, 18 mm.

Habitat, Atlantic States to Texas.

Genus **Parasa** *Moore.*

1859—*Parasa* MOORE, Cat. Lep. Mus. E. I. C., Vol. II, p. 413.
1864—*Callochlora* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 339.

P. chloris *Herrich-Schäffer.*

1854—*Nœra chloris* HERRICH-SCHÆFFER, Saml. Auss. Schmett., Vol. I, f. 176.
1881—*Parasa fraterna* GROTE, Papilio, Vol. I, p. 5.

P. viridis Neum.

Thorax green, abdomen brown. Fore wings crossed by a broad green band which reaches base at internal margin. Terminal space evenly brown. Secondaries ochrous, outer third brown. Expanse, 18—22 mm.

abitat, Northern Atlantic States.

Genus **Sibine** *Herrich-Schäffer.*

1855—*Sibine* HERRICH-SCHÆFFER, Saml. Auss. Schmett., Vol. I, p. 7.
1860—*Empretia* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 158.
1866—*Eupalia* WALKER, Cat. Brit. Mus., pt. XXXV, p. 1927.
1878—*Neomiresa* BUTLER, Trans. Ent. Soc. Lond., p. 74.

S. stimulea *Clemens.*

1860—*Empretia stimulea* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 158.
1869—*Limacodes ephippiatus* HARRIS, Corresp., p. 301, pl. 1, ff. 7, 8, pl. 2, f. 10.

Thorax and fore wings lustrous deep seal brown. Secondaries and abdomen chocolate brown. A blackish shade in cell and below median vein. Two or three minute white dots sub-apically and another below median vein beyond base. Expanse, 15—25 mm.

Habitat, Atlantic States, especially southward.

Genus **Eulimacodes** *Möschler.*

1878—*Eulimacodes* MŒSCHLER, Verh. Zool.-Bot. Ges. Wien., Vol. XXVII, p. 672.

Synopsis of species.

Costal portion of wing brown, contrasting with portion at internal margin . . . . . **scapha.**
Ground of color of wing uniform . . . . . **trigona.**

E. scapha *Harris.*

1841—*Limacodes scapha* Harris, Rep. Ins. Mass., p. 303; 1864—Walsh, Proc. Bost. Soc. N. H., Vol. IX, p. 298.

1855—*Limacodes undifera* Walker, Cat. Brit. Mus., pt. V, p. 1149.

Wood-brown. Costal area of primaries deep reddish brown, enclosing a black discal dot and separated by a very much curved silvery line from the rest of the wing. The silvery color spreads downward, gradually fading into wood-brown. Secondaries chocolate brown. Expanse, 25 mm.

Habitat, Atlantic States westward.

E. trigona *Hy. Edwards.*

1882—*Limacodes trigona* Hy. Edwards, Papilio, Vol. II, p. 12.

Pale wood-brown, secondaries pale chocolate but paler than in *scapha;* at base of primaries, is a rounded triangular silvery white mark, surrounded by a chocolate brown cloud which obtains faintly at apex also. Antennæ with distinct serrations, but not pectinate. Expanse, 30 mm.

Habitat, Arizona.

Genus **Apoda** *Haworth.*

1809—*Apoda* Haworth, Lep. Brit., Vol. II, p. 137.

1810?—*Cochlidion* Hübner, Tentamen, p. 2.

1825—*Limacodes* Latreille, Fam. Nat., p. 474.

Synopsis of species.

Space included by transverse maculation, discolorous.
- Fore wings wood-brown . . . . . **biguttata.**
- Fore wings ocherous.
  - A spot of ground color at internal angle . . . . **rectilinea.**
  - No distinct spot at internal angle . . . . *var.* **latomia.**

Ground color of wing concolorus.
- Size moderate: expanse, 27 mm . . . . . **y-inversa.**
- Size smaller: expanse, 20 mm . . . . . *var.* **parallela.**

A. biguttata *Packard.*

1864—*Limacodes biguttata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 341.

1865—*Limacodes tetraspilaris* Walker, Cat. Brit. Mus., Vol. XXXII, p. 486.

Wood-brown, secondaries blackish. A very broad inverted Y-shaped paler band across the wing, defined by its whitish borders and cutting off at apex and at internal margin a triangular space which is of a contrasting dark ocherous brown. Expanse, 20—25 mm.

Habitat, Northern Atlantic States.

A. rectilinea *Grote & Robinson.*

1868—*Lithacodes rectilinea* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 188.

var. **latomia** *Harvey.*

1875—*Limacodes latomia* HARVEY, Can. Ent., Vol. IX, p. 75.

Ochraceous brown, secondaries paler. Space between the oblique blackish transverse lines discolorous, grayish. Apex concolorous with base. A spot of ground color at internal angle, absent in the *var. latomia.* Expanse, 22 mm.

Habitat, Southern States.

A. y-inversa *Packard.*

1864—*Limacodes y-inversa* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 341.

var. **parallela** *Hy. Edwards.*

1886—*Limacodes parallela* HY. EDWARDS, Ent. Amer., Vol. II, p. 10.

Brownish ocherous, secondaries paler. An oblique brown line from middle of costa to basal third of internal margin. Another reversed oblique line from outer one-third of costa to above internal angle on exterior margin; a third fainter line, parallel to the first, reaching from outer third of internal margin to middle of the second line. Expanse, 25 mm.

The *var. parallela* has the sub-apical oblique line nearer the apex, and is smaller. Expanse, 20 mm.

Habitat, Atlantic States.

Genus **Heterogenea** *Knoch.*

1793—*Heterogenea* KNOCH, Beitr. Insect., Vol. III, p. 60.

Synopsis of species.

Wings partly obscured by brown shades . . . . . **cæsonia.**
Wings with lines only . . . . . **flexuosa.**

H. cæsonia *Grote.*

1880—*Limacodes cæsonia* GROTE, North Am. Ent., Vol. I, p. 60.
1864—? *Heterogenea shurtleffii* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 346.

Ocherous, a large blackish brown patch occupying the centre of the wing, filling in the normal maculation, but leaving a spot of the ground color centrally and at internal angle or extending diffusely to apex and rendering the whole wing brownish except the basal third. Secondaries blackish, ocherous at base. Expanse, 18—23 mm.

Habitat, Northern Atlantic States.

H. flexuosa *Grote.*

1854—?*Limacodes textula* HERRICH-SCHÆFFER, Auss. Schmett., Vol. I, f. 184.
1880—*Limacodes flexuosa* GROTE, North Am. Ent., Vol. I, p. 60.
1887—*Lithacodia grœfii* PACKARD, Ent. Amer., Vol. III, p. 52.

Ocherous, the fore wings darker, more brownish. Markings like *A. y-inversa*, but confused and indistinct. Expanse, 15—22 mm.

Habitat, Northern Atlantic States.

Genus **Tortricidia** *Packard.*

1864—*Tortricidia* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 347.
1864—‖*Lithacodes* Packard*, Proc. Ent. Soc. Phil., Vol. III, p. 345.
1864—*Kronæa* Reakirt, Proc. Ent. Soc. Phil., Vol. III, p. 441.

Synopsis of species.

Fore wings crossed by faint lines or shades, or immaculate.
  Faint lines only present if any.
    Hind wings pale.
      The lines discernible . . . . . **flavula.**
      Fore wings immaculate . . . . . *var.* **pallida.**
    Hind wings uniform blackish . . . . . **minuta.**
  A extensive brown shading . . . . . **testacea.**
Fore wings crossed by a toothed white line.
  A dark shade outside this line . . . . . **fasciola.**
  This shade absent . . . . . *var.* **laticlavia.**

T. flavula *Herrich-Schäffer.*

1854—*Limacodes flavula* Herrich-Schæffer, Ausser. Schmett., Vol. I, f. 185.

var. **pallida** *Herrich-Schäffer.*

1854—*Limacodes pallida* Herrich-Schæffer, Ausser. Schmett., Vol. I, f. 183.

Lustrous silky flesh-brown, darker along external margin with traces of brown lines. Secondaries pale straw-yellow, darker along fringes. Expanse, 13—18 mm.

The *var. pallida* is immaculate.

Habitat, Northern Atlantic States.

T. minuta *Reakirt.*

1864—*Limacodes minuta* Reakirt, Proc. Ent. Soc. Phil., Vol. III, p. 251.

Fore wings and body clay colored with a silky look; hind wings blackish or brownish. Expanse, 10—12 mm.

Habitat, Atlantic States.

[Description kindly furnished us by Dr. Herman Strecker.]

T. testacea *Packard.*

1864—*Tortricidia testacea* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 348.

Brownish ochraceous, especially brown on the outer half of the wing, forming a broad diffuse transverse shade, best defined on the venules. Secondaries pale stramineous. Expanse, 16 mm.

Habitat, Northern Atlantic States.

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* A genus of Noctuidæ; Hübner. Verz. bek. Schmett., p. 205 (1816).

T. fasciola *Herrich-Schäffer.*

1854—*Limacodes fasciola* HERRICH-SCHÆFFER, Ausser. Schmett., Vol. I, f. 186.

var. **laticlavia** *Clemens.*

1860—*Limacodes laticlavia* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 157.

Ocherous brown, secondaries blackish or straw color. A white band crosses fore wing centrally with a tooth outward, followed (except in *var. laticlavia*) by a broad purplish brown shade. A curved brown line from internal angle to costa at end of white band. Expanse, 16—20 mm.

Habitat, Atlantic States.

Genus **Packardia** *Grote & Robinson.*

1866—*Packardia* GROTE & ROBINSON, Ann. Lyc. Nat. Hist. N. Y., Vol. VIII, p. 373.
1864—‖*Cyrtosia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 342.

Synopsis of species.

Spots above internal angle of primaries black or blackish.
- Fore wings bronzy brown . . . . . **elegans.**
- Fore wings whitish buff . . . . . *var.* **fusca.**

Spots above internal angle white.
- Secondaries whitish . . . . . **geminata.**
- Secondaries blackish.
  - Fore wings obscured by dark shadings . . . **albipunctata.**
  - Fore wings only slightly obscured . . . . *var.* **ocellata.**

P. elegans *Packard.*

1864—*Cyrtosia elegans* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 342.
1881—*Packardia nigripunctata* GOODELL, Can. Ent., Vol. XIII, p. 30.

var. **fusca** *Packard.*

1864—PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 343.

Blackish or bronzy brown to pale whitish buff. Two oblique whitish lines, outer reaching only to a third line which runs from near middle of costa to internal angle contiguous to two or three superposed black spots. Inner white line bordered with blackish. Expanse, 20 mm.

Habitat, Northern Atlantic States.

(TO BE CONTINUED.)

PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumœgen and Harrison G. Dyar.

(Continued from page 76.)

P. geminata *Packard.*

1864—*Packardia geminata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 343.

Marked exactly as in *albipunctata* but with paler secondaries and the shading on primaries usually less extensive. Expanse, 26 mm.

Habitat, Northern Atlantic States. Probably not different from the following.

P. albipunctata *Packard.*

1864—*Packardia albipunctata* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 344.
1880—*Packardia goodellii* Grote, Can. Ent., Vol. XII, p. 242.

var. **ocellata** *Grote.*

1865—*Packardia ocellata* Grote, Proc. Ent. Soc. Phil., Vol. IV, p. 322.

Ground color white; three brown bands, the inner two oblique, parallel; the third running in a reverse direction from costa to internal angle where are two or three superposed silvery white spots. The wing is more or less obscured by ocherous and chocolate brown shadings, though the ground color appears at the apex; secondaries blackish. Expanse, 23—27 mm.

Habitat, Northern Atlantic States.

Family LAGOIDÆ.

Synopsis of genera.

Vein 1 of primaries branched.
- Veins 3 and 4 of secondaries stalked . . . . . **Carama.**
- Veins 3 and 4 arising separately . . . . . **Megalopyge.**

Vein 1 of primaries unbranched.
- Antennæ longer than thorax; body robust . . . . **Eupoeya.**
- Antennæ very short; primaries with accessory cell . . **Dalcerides.**

Genus **Carama** *Walker.*

1855—*Carama* Walker, Cat. Brit. Mus., pt. IV, p. 843.
1858—*Mallatodesma* Wallengren, Nat. Akad. Handl., Vol. XV, p. 212.
1864—*Ulosota* Grote, Proc. Ent. Soc. Phil., Vol. III, p. 524.

C. cretata *Grote.*

1864—*Ulosota cretata* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 524.

Silky milk white, immaculate, except the head which is lemon yellow between the antennæ, and blackish beneath. Antennæ pale fulvous brown, the stem white at base. Abdomen marked with fulvous on the segments; dorsal hairs white, except a large, pale, lemon yellow tuft at base. Expanse, 27 mm.

Habitat, Southern States [Grote].

C. pura Butler sept. 172

Genus **Megalopyge** *Hübner.*

1822? —*Megalopyge* HÜBNER, Verz. bek. Schmett., p. 185.
1841—*Lagoa* HARRIS, Rep. Ins. Mass., p. 205.
1855—*Chrysopyga* HERRICH-SCHÆFFER, Ausser. Schmett., Vol. I, p. 6.
1855—*Gasina* WALKER, Cat. Brit. Mus., pt. VI, p. 1478.
1856—*Podalia* WALKER, Cat. Brit. Mus., pt. VII, p. 1714.
1860—*Pimela* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 156.

Synopsis of species.

Wings immaculate brownish ocher . . . . . **pyxidifera.**
Wings shaded with black and brown.
Color ocher yellow . . . . . **opercularis.**
Color straw yellow . . . . . **crispata.**

M. pyxidifera *Abbot & Smith.*

1797—*Phalæna pyxidifera* ABBOT & SMITH, Lep. Ins. Ga., Vol. II, pl. 54.

Immaculate brownish ocher throughout, the thorax rather darker and hind wings paler. Body woolly as also base of fore wings. Expanse, 25 mm.

Habitat, Southern Atlantic States.

M. opercularis *Abbot & Smith.*

1797—*Phalæna opercularis* ABBOT & SMITH, Lep. Ins. Ga., Vol. II, pl. 53.
1860—*Pimela lanuginosa* CLEMENS, Proc. Acad. Nat. Sci. Phil., Vol. XII, p. 157.
1869—*Miresa* (?) *subcitrina* WALKER, Char. Lep. Het., p. 20.

Thorax brownish ocher, fore wings at apices dull yellow, secondaries straw yellow. Basal two-thirds of primaries covered with wrinkled hairs of a purplish brown color mixed with white, the purplish tint predominating on costa. Expanse, 25—38 mm.

Habitat, Southern States.

M. crispata *Packard.*

1864—*Lagoa crispata* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 335.

Pale straw yellow, the long wool on basal part of fore wing much wrinkled, purplish black along the costa and brown over the

discal area, leaving a broad terminal space of the ground color. Expanse, 25—30 mm.

Habitat, Northern Atlantic States.

Genus **Eupoeya** *Packard.*

1893—*Eupoeya* Packard, Ent. News, Vol. IV, p. 167.

E. slossoniæ *Packard.*

1893—*Eupoeya slossoniæ* Packard, Ent. News, Vol. IV, p. 169.

Pure white with no markings; pectinations of antennæ dusky. Expanse, 22 mm.

Habitat, Florida.

Genus **Dalcerides** *Neumœgen & Dyar.*

1893—*Dalcerides* Neumœgen & Dyar, Can. Ent., Vol. XXV, p. 121.

D. ingenita *Hy. Edwards.*

1882—*Artaxa ingenita* Hy. Edwards, Papilio, Vol. II, p. 12; 1893—Neumœgen & Dyar, Can. Ent., Vol. XXV, p. 121.

Thorax and fore wings dark ocherous, abdomen and hind wings reddish ocherous, immaculate. Wings broad, rounded, antennæ not as long as the thorax. Expanse, 35 mm.

Habitat, Arizona.

Family DIOPTIDÆ.

Genus **Phryganidia** *Packard.*

1864—*Phryganidia* Packard, Proc. Ent. Soc. Phil., Vol. IV, p. 348.

P. californica *Packard.*

1864—*Phryganidia california* Packard, Proc. Ent. Soc. Phil., Vol. IV, p. 349.

Uniform pale brown, translucent, veins showing prominently; collar tinged with yellow. In the ♂ a pale yellow, diffuse cloud beyond the end of cell. Expanse, 30—35 mm.

Habitat, California.

According to Kirby's Catalogue, the following species occurs in North America. It is unknown to us:—

Dioptis megæra *Fabricius.*

1787—*Bombyx megæra* Fabricius, Mant. Ins., Vol. II, p. 109, n. 12.

Fore wings light bluish spotted with white. Hind wings white in the middle, bluish at apex with waved reddish bands. (Linné Syst. Nat. (5), 2404, n. 467).

Family NOTODONTIDÆ.*

Synopsis of subfamilies and genera.

Outer margin of primaries excavate below apex; accessory cell on a long stalk . . . . . **Apatelodinæ.**

Outer margin entire, or at most moderately excavate between the termination of the nervules.

Antennæ of ♂ bipectinated to the tip or simple . . **Notodontinæ.**

Antennæ of ♂ with distinct pectinations.

Primaries with an accessory cell.

A tufted tooth on internal margin of primaries . . **Notodonta.**

Internal margin entire.

Pectinations of antennæ long.

Thorax with large central tuft . . . . . **Nadata.**

Thorax untufted . . . . . **Hyparpax.**

Pectinations moderate or short.

Costa of primaries straight, apex rectangular . **Symmerista.**

Costa convex, apex rounded . . . . . **Nerice.**

Primaries without accessory cell. (Rarely a small one in one *Cerura*.)

Internal margin entire.

Vein 5 of secondaries distinct . . . . . **Cerura.**

Vein 5 of secondaries weak or absent.

Tip of abdomen with a brush-like tuft . . **Melalopha.**

Tip of abdomen simple.

Size small . . . . . **Gluphisia.**

Size larger . . . . . **Eumelia.**

A tufted tooth on internal margin of primaries . . . **Pheosia.**

Antennæ of ♂ simple, without distinct pectinations.

A tufted tooth on internal margin of primaries.

Accessory cell absent . . . . . **Lophodonta.**

Accessory cell present . . . . . **Lophopteryx.**

Internal margin entire.

Accessory cell present . . . . . **Datana.**

Accessory cell absent . . . . . **Nystalea.**

Antennæ of ♂ pectinated for basal two-thirds or more, the tips bare . . . . . **Heterocampinæ.**

A slight tooth on internal margin of primaries . . . **Ianassa.**

Internal margin entire.

Accessory cell present.

Antennæ of ♀ simple.

Antennæ of ♂ pectinated for basal three-fourths or less.

A vertical tuft on the head; black spots above internal angle of primaries . . . . **Dasylophia.**

Head without a distinct erect tuft.

Terminal abdominal hairs gathered into a more or less conspicuously bifid tuft . . **Schizura.**

* For a fuller treatment of this family see Trans. Am. Ent. Soc., Vol. XXI, pp. 179–208.

Anal tuft not normally bifid.
Accessory cell moderately long . . **Euhyparpax.**
Accessory cell reaching half-way to apex of wing.
Wings elongate, more than twice as long as broad . . . . **Heterocampa.**
Wings shorter, twice as long as broad or less . **Cecrita.**
Antennæ of ♂ pectinated nearly to tip . . **Misogada.**
Antennæ of ♀ pectinated . . . . . **Litodonta.**
Accessory cell absent; veins 6—10 stalked.
Head moderately prominent . . . . **Macrurocampa.**
Head sunken in the thorax . . . . . **Ellida.**

Subfamily APATELODINÆ.

Genus **Apatelodes** *Packard.*

Synopsis of species.

Outer margin entire below vein 5 . . . . . **torrefacta.**
Outer margin deeply excavate between the terminations of veins . **angelica.**

Subfamily NOTODONTINÆ.

Genus **Notodonta** *Ochsenheimer.*

Synopsis of species.

Size large; external margin of primaries excavate between the veins . **elegans.**
Size smaller; external margin entire.
Fore wings shaded with ocher and brown along internal and external margins.
Thorax dark ash-gray . . . . . **stragula**
Thorax blackish gray . . . . . **pacifica.**
Fore wing without ocherous brown marks, but with longitudinal black dashes before internal angle.
Primaries yellowish at base and disk . . . . **georgica.**
Primaries uniform stone-gray . . . . . **tortuosa.**

Genus **Nadata** *Walker.*

Synopsis of forms.

Color buff or orange buff to red.
General color buff.
Excavations on external margin filled in with white . . **gibbosa.**
Fringe uniformly ocherous . . . . . var. **doubledayi.**
Color deep orange red . . . . . race **rubipennis.**
Color straw yellow.
Wings without black shades . . . . race **oregonensis.**
A black shade at end of cell . . . . var. **behrensii.**

Genus **Hyparpax** *Hübner.*

Synopsis of species.

Median space clear yellow . . . . . **aurora.**
Median space irrorate or covered by reddish scales.
Fore wing pink, with only a line of yellow . . . . . **venus.**
Fore wing pale, dull ocherous with lines and irrorations of brownish red . . . . . **perophoroides.**

Genus **Symmerista** *Hübner.*

Synopsis of species.

A white costal edging . . . . . **albifrons.**
No white edging . . . . . **packardii.**

Genus **Nerice** *Walker.*

N. bidentata *Walker.*

Genus **Cerura** *Schrank.*

Synopsis of species.

Primaries crossed by about eight angularly undulate black lines.
Secondaries black . . . . . **multiscripta.**
Secondaries white . . . . . **scitiscripta.**
Primaries crossed at basal third by a broad gray band, sometimes absent.
One or more transverse dentate lines on discal area before the subterminal shade.
Transverse band gray, pulverulent, bordered by black and orange scales.
Fore wings pale cinereous . . . . . **occidentalis.**
Fore wings white.
Transverse band broad . . . . **scolopendrina.**
Transverse band narrow or broken . . *var.* **albicoma.**
Band even blackish, without distinct borders . . . **modesta.**
A double row of venular dots, forming an ellipse, sometimes obsoletely connected . . . . . **borealis.**
A single row of venular dots, preceded by a rigid shade line, or discal area immaculate.
Fore wings dark cinereous . . . . . **cinerea.**
Fore wings pale cinereous . . . . *var.* **cinereoides.**
Fore wings nearly white.
Transverse gray band distinct . . . . *var,* **placida.**
This band very obscure or absent . . . . *var.* **nivea.**

Genus **Melalopha** *Hübner.*

Synopsis of species.

Lines on primaries not anastamosing, free.
Size large with a distinct large brown apical shade . . **albosigma.**
Size smaller; apical region not distinctly discolored.

Wing uniform in tint . . . . . **alethe.**
Wing shaded with darker blotches.
Pale, the blotches contrasting . . . . . **brucei.**
Dark, more uniformly obscured . . . . . **multnoma.**
Lines anastomosing, the second joining the third.
Lines uneven, the basal toothed.
Subapical patch pale, yellowish, the s.-t. dots preceded by streaks . . . . . **strigosa.**
Patch yellowish to rusty-brown, without streaks.
Size moderate; thoracic mark present . . . **apicalis.**
Larger; no thoracic mark . . . . . **inornata.**
Lines nearly even, the basal one dislocated, but not toothed.
4th line white on costa . . . . . **inclusa.**
4th line not distinctly white . . . . . **jocosa.**

Genus **Gluphisia** *Boisduval.*

Synopsis of species.

With a yellow (or black) central band on primaries more or less distinct.
Markings distinct . . . . . **septentrionalis.**
Markings confused and irrorate . . . . . **formosa.**
Pale, with no distinct yellowish markings . . . . . **albofascia.**

Genus **Eumelia** *Neumœgen.*

Synopsis of species.

A yellow angular discal dot . . . . . **severa.**
No discal dot . . . . . **lintneri.**

Genus **Pheosia** *Hübner.*

Synopsis of species.

A silvery white line at base of vein 1.
Central part of fore wing white . . . . . **dimidiata.**
Wing centrally smoky black . . . . . **portlandia.**
Without silvery white mark.
Uniform blackish gray with black discal dot . . . **simplaria.**
Primaries brown at base; no discal dot . . . . **basitriens.**

Genus **Lophodonta** *Packard.*

Synopsis of species.

Primaries partly shaded with ferruginous brown . . . **ferruginea.**
Primaries with scattered ocher-yellow marks . . . . **angulosa.**

Genus **Lophopteryx** *Stephens.*

L. capucina *Linnæus.*

Genus **Datana** *Walker.*

Synopsis of species.

Outer margin of primaries distinctly excavate between the veins.
- Color entirely smoky or blackish brown . . . . . **angusii.**
- Color yellowish brown or paler.
  - Discal spots faint or absent, size medium.
    - Color yellow brown . . . . . **ministra.**
    - Color testaceous . . . . . **californica.**
  - Discal spots distinct, size large . . . . . **drexelii.**

Outer margin indistinctly excavate, nearly entire in the ♂.
- Color tawny-brown or purplish.
  - Tawny-brown, discal spots distinct, size large . . . **major.**
  - More or less purplish, discal spots indistinct, size medium.
    - Thoracic patch reddish brown.
      - Fore wings dull whitish lilac, more or less covered with cinnamon-brown scales . . . . **palmii.**
      - Fore wings dark brown with a purplish flush . **floridana.**
    - Thoracic patch ocherous . . . . . **modesta.**
- Color yellowish buff.
  - Thoracic patch tawny-brown . . . . . **perspicua.**
  - Thoracic patch as pale as thorax . . . . . **robusta.**

Outer margin of primaries entire or a little wavy in the ♀.
- Primaries dark reddish-brown, lines and fringe concolorous, **integerrima.**
- Primaries luteous-tawny, lines and fringe not concolorous . **contracta.**

Genus **Nystalea** *Guenée.*

N. indiana *Grote.*

Subfamily HETEROCAMPINÆ.

Genus **Ianassa** *Walker.*

Synopsis of species.

Yellowish or sordid cinereous . . . . . **lignicolor.**
Bright bluish cinereous . . . . . **coloradensis.**

Genus **Dasylophia** *Packard.*

Synopsis of species.

T.-p. line on primaries distinct, arcuate, even . . . . . **anguina.**
T.-p. line obsolete superiorly; markings streaked longitudinally, **thyatiroides.**

Genus **Schizura** *Doubleday.*

Synopsis of species.

Transverse bands largely absent.
- Size small (36 mm. or less), the brown shade along internal margin of primaries, distinct . . . . . **concinna.**
- Size larger (40 mm. or more), this shade less distinct or absent.
  - Yellowish cinereous at apex, reddish shade moderately distinct, **eximia.**

Bright cinereous at apex; shade along internal margin yellowish or absent . . . . . **perangulata.**

Transverse bands normally present.

Discal dot surrounded by a light cinereous space.

Scarcely any black shading on primaries . . . . **ipomœæ.**

Two long black dashes . . . . . *var.* **telifer.**

Whole middle of wing black to outer margin . *var.* **cinereofrons.**

Discal dot on the ground color.

Primaries pale green at extreme base . . . . **unicornis.**

Without green tints.

Discal dot lunate; size small.

Transverse lines distinct, black, coarsely undulate . **apicalis.**

Lines faint, reddish, finely undulate . . . . **nitida.**

Discal dot round; size larger . . . . **leptinoides.**

Genus **Euhyparpax** *Beutenmüller.*

E. rosea *Beutenmüller.*

Genus **Heterocampa** *Doubleday.*

Synopsis of species.

Size large (Expanse, 40 mm. or more.)

Discal streak lunate.

Wings varied with whitish, especially sub-apically. *chapmani Grote*

With conspicuous greenish-gray shades . . . **astarte.**

More uniformly cinereous . . . . . **obliqua.**

A large brown patch beyond cell . . . *var.* **trouvelotii.**

Wings very uniformly dark-gray . . . . . **lunata.**

Wings without distinct white sub-apical shade, sub-basal field dark . . . . . **umbrata.**

Discal mark ovate or reniform . . . . . **manteo.**

Size small (Expanse, 35 mm. or less.)

Wings greenish or gray with white sub-apical shade . . **subrotata.**

Wings evenly gray without any white shade . . . . **belfragei.**

Genus **Cecrita** *Walker.*

Synopsis of species.

Dull greenish; transverse lines purplish brown, geminate, lunulate . **biundata.**

Whitish, clouded with black; transverse lines faint . . . **guttivitta.**

Cinereous, with black, geminate, angular, transverse lines . . **bilineata.**

Genus **Misogada** *Walker.*

M. cinerea *Packard.*

Genus **Litodonta** *Harvey.*

L. hydromeli *Harvey.*

Genus **Macrurocampa** *Dyar.*

M. marthesia *Cramer.*

Genus **Ellida** *Grote.*

E. caniplaga *Walker.*

Family BOMBYCIDÆ.

Genus **Bombyx** *Linnæus.*

1758—*Bombyx* LINNÆUS, Syst. Nat., Vol. I, p. 499.

B. mori *Linnæus.*

1758—*Bombyx mori* LINNÆUS, Syst. Nat., Vol. I, p. 499, n. 18; 1891—SMITH, List. Lep., No. 1413.

Entirely white, with very faint brown t. a., median and t. p. bands and discal dot. This is the well known "silk-worm" moth, and is cultivated in various parts of this country.

Family PSYCHIDÆ.*

Synopsis of genera.

Vein 1b of primaries sending a branch to internal margin.
  Wings elongate, narrow.
    Hind wings triangular, apex acuminate . . . **Oiketicus.**
    Hind wings rounded, apex obtuse . . . . **Thyridopteryx.**
  Wings broader; size small . . . . . **Psyche.**
    Vein 6 present on fore wing, absent on hind wing, *group* **Platœceticus.**
    Vein 6 absent on both wings . . . . *group* **Eurycyttarus.**
Vein 1b free from inner margin, without a branch . . . . **Chalia.**

Genus **Oiketicus** *Guilding.*

1837—*Oiketicus* GUILDING, Trans. Linn. Soc. Lond., Vol. XV, p. 375.

O. abbotii *Grote.*

1880—GROTE, N. Am. Ent., Vol. I, p. 52.

♂ Sable brown with a vitreous bar at the extremity of the cell of the primaries. The narrow external edging of the wings is pale. A blackish streak at base on vein 1, and a broad shade from cell outward to external margin. Expanse, 30 mm.

Habitat, Florida.

Genus **Thyridopteryx** *Stephens.*

1834—*Thyridopteryx* STEPHENS, Ill. Brit. Ent. Haust., Vol. IV. p. 387.
1865—*Hymenopsyche* GROTE, Proc. Ent. Soc. Phil., Vol. V, p. 248.

Synopsis of species.

Veins of wings brown . . . . . **ephemeræformis.**
Veins of wings pale orange . . . . . **meadii.**

T. ephemeræformis *Haworth.*

1803—*Sphinx ephemeræformis* HAWORTH, Lep. Brit., p. 72.
1864—*Eceticus coniferarum* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 351.

* The wingless females of all the species in this family are not very characteristic, and descriptions of them are omitted.

♂ Body black, wings hyaline, the veins brown. Along costa and internal margin of secondaries a few black scales. Expanse, 25 mm

Habitat, Southern States to New York.

T. meadii *Hy. Edwards.*

1881—*Thyridopteryx meadii*, Papilio, Vol. I, p. 116.

Wings hyaline, without black scales at abdominal margin of secondaries; veins pale orange. Expanse, 25 mm.

Habitat, Mohave Desert, California.

Genus **Psyche** *Schrank.*

1802—*Psyche* Schrank, Fauna Boica, Vol. II (2), p. 87.

Group **Platœceticus** *Packard.*

1869—*Platoeceticus* Packard, Guide Study Ins., p. 291; 1887—Packard, Ent. Amer., Vol. III, p. 51.

1893—*Heylaertsia* Hampson, Moths of India, Vol. I, p. 298.

P. gloverii *Packard.*

1869—*Platœceticus gloverii* Packard, Guide Study Ins., p. 291, f. 223.

1884—*Manatha edwardsii* Heylaerts, C. R. Soc. Ent. Belg., Vol. XXVIII, p. 101.

Dark brown throughout. Veins 5—6 arise from the discal cross vein. Expanse, 20—22 mm.

Habitat, Southern States.

Group **Eurycyttarus** *Hampson.*

1891—*Eurycyttarus* Hampson, Ill. Het. B. M., Vol. VIII, p. 66; 1893—Hampson, Moths of India, Vol. I, p. 299.

Synopsis of species.

Small, wings blackish . . . . . **confederata.**
Larger, wings brownish gray . . . . . **carbonaria.**

P. confederata *Grote & Robinson.*

1868—*Psyche confederata* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 191.

Uniformly blackish; wings opaque. Wings broad, apex of primaries nearly square. Expanse, 16—19 mm.

Habitat, Southern States to New York and westward.

P. carbonaria *Packard.*

1887—*Psyche carbonaria* Packard, Ent. Amer., Vol. III, p. 51.

Uniform brownish black, wings sub-translucent. Wings broad, well rounded; body black, hairy. Expanse, 21—22 mm.

Habitat, Texas.

Genus **Chalia** *Moore.*

1877—*Chalia* MOORE, Ann. Nat. Hist. (4), Vol. XX, p. 345.

C. rileyi *Heylaerts.*

1884—*Chalia rileyi* HEYLAERTS, Ann. Soc. Ent. Belg., Vol. XXVIII, p. 208.

Yellowish gray, densely hairy; head yellowish brown, thorax brownish gray. Wings concolorous, with narrow brownish edge. Expanse, 12 mm. (?)

Habitat, Missouri [Heylaerts].

[For remarks on *Psyche fragmentella* Hy. Edw. and *Oiketicus davidsonii* Hy. Edw. see a paper by Mr. Dyar, Ent. News, Vol. IV, p. 320. These names have been applied to certain larval cases found in California and the moths have never been described.]

Family LACOSOMIDÆ.

Synopsis of genera.

Primaries falcate . . . . . **Cicinnus.**
Margins of both wings uneven, excavate between the veins . **Lacosoma.**

Genus **Cincinnus** *Blanchard.*

1852—*Cicinnus* BLANCHARD, Gay's Hist. Chile. Zool., Vol. VII, p. 66.
1841—‖*Perophora* HARRIS, Rep. Ins. Mass., p. 290.
1841—‖*Saccophora* HARRIS, Entom., Vol. I, p. 99.

C. melsheimeri *Harris.*

1841—*Perophora melsheimeri* HARRIS, Rep. Ins. Mass., p. 290.
1866—*Arhodia egenaria* WALKER, Cat. Brit. Mus., pt. XXXV, p. 1575.

Cinereous gray, darker along the margins of the wings, the reddish brown of the wing membrane appearing by transparency. Sparsely sprinkled with black atoms. A blackish discal dot and straight t. p. line, the latter present on both wings and arcuate at costa of fore pair. Expanse, 30 mm.

Habitat, Atlantic States.

Genus **Lacosoma** *Grote.*

1864—*Lacosoma* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 77.

L. chiridota *Grote.*

1864—*Lacosoma chiridota* GROTE, Proc. Ent. Soc. Phil., Vol. III, p. 78.

Brownish ocher, the fringe marked with black on the veins. On both wings, a black discal dot and broad, diffuse, undulate, smoky brown t. p. band. Expanse, 25 mm.

Habitat, Atlantic States westward.

Family SATURNIIDÆ.

Synopsis of subfamilies.

Antennæ bipectinate doubly, at least in the ♂ . . . . . **Attacinæ.**
Antennæ never bipectinate doubly . . . . . **Lemoniinæ.**

see 172

Synopsis of genera.

Secondaries with one distinct internal vein.
  Discal cells open.
    Abdomen tufted . . . . . **Philosamia.**
    Abdomen untufted.
      Antennæ of both sexes equally doubly bipectinated.
        Wings produced at apices and elongate; secondaries greatly exceeding abdomen, discal spots hyaline . . . . . **Attacus.**
        Wings less elongate, more rounded, spots opaque . **Samia.**
      Pectinations of ♀ antennæ with the upper branch the shorter . . . . . **Callosamia.**
  Discal cells closed.
    Antennæ pectinated in both sexes.
      Antennæ of ♀ doubly bipectinated.
        Both branches equal in length in ♀ . . . **Agapema.**
        The upper branch shorter than the lower in ♀.
          Secondaries tailed . . . . . **Tropæa.**
          Secondaries angulated at apex and middle of outer margin . . . . . **Telea.**
      Antennæ of ♀ singly bipectinated, the upper branches reduced to serrations . . . . . **Saturnia.**
    Antennæ of ♀ serrate or simple.
      Secondaries ocellate . . . . . **Automeris.**
      Secondaries not ocellate . . . . . **Thauma.**
Secondaries with two internal veins.
Antennæ of ♂ doubly bipectinated . . . . . **Coloradia.**
Antennæ of ♂ singly bipectinated.
  Vein 5 from the discal cross vein . . . . . **Lemonia.***
  Vein 5 from apex of cell on both wings.
    Antennæ of ♀ pectinated . . . . . **Hemileuca.**
    Antennæ of ♀ serrate or very shortly pectinated . **Pseudohazis.**

Subfamily **Attacinæ.**

Genus **Philosamia** *Grote.*

1874—Grote. Proc. Am. Phil. Soc., Vol. XIV, p. 258.

P. cynthia *Drury.*

1773—*Attacus cynthia* Drury, Ill. Ex. Ent., Vol. II, pl. 6, f. 2.
1787—*?Bombyx aurotus* Fabricius, Mant. Ins., Vol. II, p. 108.
1862—*Saturnia insularis* Vollenhoven. Rev. Zool. (2), Vol. XIV, p. 338.

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* A European genus. Type *Bombyx dumi* Linn.

Yellowish olive-brown, densely irrorate with black except along the border of wings. Abdomen with three rows of white tufts. Transverse lines white, bordered on one side with black, the outer line shading outwardly into a light purplish tint. Discal marks narrowly lunate, hyaline, with a yellow shade on the concave side. A sub-apical black ocellus with white crescent, below a large apical purplish shade. Expanse, 120 mm.

Habitat, Vicinity of several Atlantic coast cities; introduced from the East Indies.

Genus **Attacus** *Linnæus.*

1767—*Attacus* LINNÆUS, Syst. Nat., Vol. I (2), p. 809.
1841—*Hyalophora* DUNCAN, Nat. Libr. Ex. moths, p. 124.

Synopsis of species.

Color rather light-brown, collar only partly white . . . . . **erycina.**
Dark blackish-brown, collar white . . . . . **jorulla.**

A. erycina *Shaw.*

1797—*Attacus erycina* SHAW, Nat. Misc., Vol. VII, p. 230.
1805?—*Phalæna splendidus* BEAUVOIS, Ins. Afr. Amér., p. 133.

Discal spots trigonate, large, hyaline, fused into the outer band. Color pale russet-brown, clay-colored on margins, with the usual markings. T. a. band arcuate, white, both t. a. and t. p. bordered towards each other by black. Beyond the crenate t. p. band a shade composed of brick-red, black, pink and white scales. Sub-median space irrorate with black. Sub-terminal marks moderately prominent. Sub-apical ocellus reduced to a black spot surmounted by the lower part of the narrow white sub-apical line.

Habitat, South America to Mexico, Texas?

A. jorulla *Westwood.*

1853—*Saturnia jorulla* WESTWOOD, Proc. Zool. Soc. Lond., p. 159, pl. XXXII, f. 1.
1883—*Attacus cinctus* TEPPER, Bull. Brook. Ent. Soc., Vol. V, p. 65.

Deep blackish umber-brown, the wings less falcate than in *erycina*. Discal spots rounded triangular, hyaline; not reaching or but touching outer band. Otherwise resembles *erycina* except that the collar is white. The transverse white band at base of abdomen is present in both. Expanse, 110—125 mm.

Habitat, Mexico, Arizona.

Genus **Samia** *Hübner.*

1822?—*Samia* Hübner, Verz. bek. Schmett., p. 156.
1865—*Platysamia* Grote, Proc. Ent. Soc. Phil., Vol. V, p. 229.

Synopsis of species.

General color grizzled-gray.
Size large, discal spots moderately produced.
Outer band of wings bright red . . . . . **cecropi.**
Outer band dull purplish, obscure . . . . . **gloveri,**
Size small, discal spots rounded, slightly produced . . **columbi.**
General color reddish, scarcely gray . . . . . **rubr.**

S. cecropia *Linnæus.*

1758—*Bombyx cecropia* Linnæus, Syst. Nat., Vol. I, p. 447.

Blackish, irrorate with white on costal part of primaries. Thorax red, collar white. Abdomen banded with black, white and red. Transverse bands white, the inner faint and absent on secondaries, the outer succeeded by a broad red band. Discal spots white bordered with red and black. Outer margins broadly clay-colored, paler sub-terminally with a narrow sinuate sub-terminal black line on primaries. A series of large black spots in the interspaces between veins 2—5. A large oval black ocellus between veins 6—7, succeeded above by a purplish shade and zigzag whitish line. On secondaries, a series of sub-terminal black spots and a line. Expanse, 120—150 mm.

Habitat, Atlantic States.

S. gloveri *Strecker.*

1872—*Platysamia gloveri* Strecker, Lep. Roph. et. Het., Vol. I.

var. **reducta** *Neumœgen.*

1891—*Platysamia gloveri* var. *reducta* Neumœgen, Ent. News, Vol. II, p. 152.

Exactly like *columbia*, but as large as *cecropia*. The discal dots are produced as in *cecropia*, but lack the red edge. T. a. band arcuate as in *columbia*. There is a purplish shade beyond the white band, not present in *columbia*. Expanse, 125 mm.

Habitat, Arizona to the Rocky Mountains and Montana.

var. *reducta*. Smaller than the typical form with the discal spot of primaries touching the p. t. band. Expanse, 83—85 mm.

Habitat, Mountains of Colorado, 11,000 feet.

S. columbia *Smith.*

1865—*Samia columbia* Smith, Proc. Bost. Soc. Nat. Hist., Vol. IX, p. 343.

Smaller than *cecropia;* the discal dots without red edges and the transverse outer band white with no red. Abdomen brown and white banded. Thorax and basal half of fore wings deep red, collar white. Discal spots rounded, triangular, only slightly produced. T. a. line arcuate, not angulated on median vein. Expanse, 90—100 mm.

Habitat, Northeastern States, Canada to Michigan.

S. rubra *Behr.*

1855—BEHR, Proc. Cal. Acad. Sci., Vol. I, p. 46.
1855—*Samia euryalus* BOISDUVAL, Ann. Soc. Ent. Fr., (2), Vol. III, p. 32 (no desc.); 1875—STRECKER, Lep. Roph. et Het., p. 102.
1865—*Platysamia californica* GROTE, Proc. Ent. Soc. Phil, Vol. V, p. 229 (note).
1868—*Saturnia ceanothi* BEHR, Proc. Cal. Acad. Sci., Vol. III, p. 296.

Of a color approaching venetian red but darker, uniform, not irrorate; outer margin clay-colored, with the markings faint, brownish. Transverse lines white, narrow, with black edging, but with no red shade. Discal spots white, edged with black, the one on primaries small, that on secondaries produced outward nearly to, or through the transverse band. Thorax red; collar, base and outer bands of abdomen white. Expanse, 95—115 mm.

Habitat, California to Pacific Northwest.

Genus **Callosamia** *Packard.*

1864—*Callosamia* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 379.

Synopsis of species.

A whitish band on collar and base of thorax . . . . . **calleta.**
Collar concolorous with abdomen.
♂ without discal spots, or with very faint ones . . **promethea.**
♂ with discal spots as in the ♀ . . . . . **angulifera.**

C. calleta *Westwood.*

1853—*Saturnia calleta* WESTWOOD, Proc. Zool. Soc. Lond., p. 166.
1886—*Attacus calleta* SMITH, Proc. U. S. Nat. Mus., p. 422.
1882—*Platysamia polysommata* TEPPER, Bull. Brook. Ent. Soc., Vol. V, p. 66.

Dull black or smoky; a pale stigmatal band on abdomen, enclosing darker spots. A white basal band or none. T. a. band of primaries white. Outer band of both wings white, edged with ferruginous and dotted with black. Discal spots angular, small, white, without edging. Terminal space mouse-gray, much ornamented with a black line and sub-triangular spots centered with bluish scales; the most prominent of these between veins 6—7

and is outwardly surrounded by a halo of russet brown reaching toward apex of wing. A zigzag, light blue sub-apical line. Expanse, 80—130 mm.

Habitat, Mexico, Southern Arizona.

C. promethea *Drury.*

1773 –*Attacus promethea* Drury, Ill. Ex. Ent., Vol. II, pl. 11, f. 1, 2.

♂ Black, outer margin clay colored, lines nearly lost; marginal marks and sub-apical ocellus normal. ♀ Reddish brown, discal spot on primaries nearly lost, that on secondaries consisting of a bar, dilated at the ends. Outer transverse line pale, distinct, bordered inwardly with black. Marginal marks as in ♂, but reddish. Expanse, 75—80 mm.

Habitat, Atlantic States westward.

C. angulifera *Walker.*

1855—*Samia angulifera* Walker, Cat. Brit. Mus., pt. V, p. 1224.
1886 –*Attacus angulifera* Smith, Proc. U. S. Nat. Mus., p. 424.

Larger than *promethia;* sexes similar in wing form and marking. ♂ darker in color than the ♀, blackish, but marked essentially the same. Discal mark on primaries large white, angular, on secondaries, a dilated bar. Expanse, 85—100 mm.

Habitat, Atlantic States.

Genus **Agapema** *Neumœgen & Dyar.*

1886—*Saturnia*‡ Smith, Proc. U. S. Nat. Mus., p 430.

A. galbina *Clemens*

1860—*Saturnia galbina* Clemens, Proc. Acad. Nat. Sci. Phil., p. 156.

Blackish; transverse lines white, the basal, angular and produced on the veins in the ♂, faint in ♀; on secondaries, the basal two-thirds is washed with white in the ♂. A sub-terminal white band on both wings; apex of primaries marked with black and crimson. Discal spots round, hyaline centrally, edged with yellow and black, with a bluish crescent inwardly. Body parts blackish with a few long whitish hairs. Expanse, 50—60 mm.

Habitat, Mexico to Arizona and Texas.

Genus **Tropæa** *Hübner.*

1822—*Tropæa* Hübner, Verz. bek. Schmett., p. 152.

T. luna *Linnæus.*

1758—*Bombyx luna* Linnæus, Syst. Nat., Vol. 1, p. 496.

var. **rossi** *Ross.*

1872—*Actias rossi* ROSS, Cat. Lep. Can., p. 5, (note).

Body white, thorax tinged with yellow with a broad purple band behind the collar. Wings pale green, the color inhering in the wing membrane and not in the vestiture, which is white. A broad costal purple band on primaries throwing out a short discal band. Discal spots rounded, hyaline centrally, narrowly edged with white, crimson and yellow and with black and blue inwardly. Fringe tinged with crimson and yellow. The var. *rossi* lacks the green tint. Expanse, 100—125 mm.; length of tails, 35—40 mm.

Habitat, Atlantic States southwestward to Texas.

Genus **Telea** *Hübner.*

1822—*Telea* HÜBNER, Verz. bek. Schmett., p. 154.

T. polyphemus *Cramer.*

1775—*Attacus polyphemus* CRAMER, Pap. Exot., Vol. I, pl. 5, figs. A. B.
1764—*Bombyx paphia* LINNÆUS, Mus. Ulr., p. 369.
1811—*Phalæna fenestra* PERRY, Arcana.
1883—*Telea polyphemus* var. *oculea* NEUMŒGEN, Pap., Vol. III, p. 71.

Ocherous brown either pale or dark and reddish. Costa of primaries and collar gray. Basal line on primaries reddish, dislocated on median vein. Outer line gray, bordered with white with a duplicate black costal streak bordered anteriorly with pink. Discal mark round hyaline edged with a yellow and a black line. Secondaries without basal line, the outer line broad. Discal mark as on primaries, but situated in the outer part of a large, oval, black ocellus, sprinkled with blue scales. Expanse, 110—120 mm.

Habitat, North America throughout.

Genus **Saturnia** *Schrank.*

1802—*Saturnia* SCHRANK, Fauna Boica, Vol. II (1), p. 149.
1806—*Heræa* HÜBNER, Tentamen, p. 1.
1822?—*Pavonia* HÜBNER, Verz. bek. Schmett., p. 157.
1886—*Calosaturnia* SMITH, Proc. U. S. Nat. Mus., Vol. IX, p. 432.

S. mendocino *Behrens.*

1876—*Saturnia mendocino* BEHRENS, Can. Ent., Vol. VIII, p. 149.

Fore wings reddish brown with blackish costa, and an apical carmine shade, becoming black inwardly and centered with white. Secondaries orange ochraceous shaded with black with an outer diffuse black band. Discal spots round, black, containing an orange ring and blue crescentic mark. Thorax reddish, collar

white with black border on front part of thorax; abdomen smoky black. Expanse, 50—60 mm.

Habitat, Northern coast region of California.

Subfamily Hemileucinae

Genus **Automeris** *Hübner.*

1822?—*Automeris* Hübner, Verz. bek. Schmett., p. 154.
1875—*Io* Boisduval, Ann. Ent. Soc. Belg., Vol. XVIII, p. 188.

Synopsis of species.

T. p. line straight.
- Size very large; secondaries without yellow . . . . **zelleri.**
- Size moderate; secondaries largely yellow,
  - Olivaceous or russet brown; t. p. line pale yellow . . **pamina.**
  - Blackish brown; t. p. line broad, white . . . **zephyria.**

T. p. line composed of a series of lunules, sexes dissimilar . . . **io.**
- Wings suffused with reddish . . . . . *var.* **lilith.**
- Abdominal border of secondaries without red shade . . *var.* **argus.**

A. zelleri *Grote & Robinson.*

1868—*Hyperchiria zelleri* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 193.

Reddish brown, basal space and costa darker; a small triangular white discal dot in a large quadrate dark discal patch, dentate on the exterior side. T. p. line purplish, straight, followed by a dark brownish shade which extends to the obsolete sub-terminal line. Secondaries reddish along abdominal margin, a large black ocellus with central black ring around which the color is pale; two blackish bands between ocellus and margin. Expanse, 130 mm.

Habitat, Texas.

A. pamina *Neumœgen.*

1822—*Hyperchiria pamina* Neumœgen. Pap., Vol. II, p. 60.

var. **aurosea** *Neumœgen.*

1882—*Hyperchiria pamina* var. *aurosea* Neumœgen, Pap., Vol. II, p. 61.

Fore wings uniform pale ochraceous or russet brown, (*var. aurosea*) with white scales at base. T. a. line barely discernible. T. p. line distinct, narrow, oblique, pale yellow, bordered outwardly with dark brown. Discal mark obscure. Abdomen red banded dorsally; secondaries yellow centrally around the large black, white centred ocellus. An outer black and a pale pinkish curved band, abdominal edge pinkish. Expanse, 60—70 mm.

Habitat, Arizona.

A. zephyria *Grote.*

1882—*Hyperchiria zephyria* Grote, Can. Ent., Vol. XIV, p. 215.

Thorax and primaries brown-black. A black discal annulus with linear white center; scales at base of wing and oblique slightly curved, broad t. p. band, white. Abdomen pale brown, broadly dark red dorsally. Secondaries ocher yellow centrally around the large black ocellus with white linear centre and blue scales; bordered by a black line outwardly. A sub-terminal darker brown shade band, the base pinkish. Expanse, 55—70 mm.

Habitat, New Mexico.

A. io *Fabricius.*

1775—*Bombyx io* FABRICIUS, Syst. Ent., p. 560.
1810—*Phalœna corollaria* PERRY, Arcana.
1855—*Hyperchiria varia* WALKER, Cat. Brit. Mus., pt. VI, p. 1278.
1875—*Io fabricii* BOISDUVAL, Ann. Ent. Soc. Belg., Vol. XVIII, p. 223.

var. **lilith** *Strecker.*

1878—*Hyperchiria lilith* STRECKER, Lep. Roph. et Het., p. 139.

var. **argus** *Neumœgen & Dyar.*

1893—NEUMŒGEN & DYAR, Can. Ent., Vol. XXV, p. 123.

Body and primaries of ♂ yellow, lines purplish. T. a. line rectangularly produced inwardly; t. p. evenly lunulate. Discal mark linear surrounded by two rows of dots which are produced longitudinally. A sinuate row of large sub-terminal dots ending on costa and margin in a purplish shade. Thorax and primaries of ♀ a purplish brown, the marks as in the ♂, but obscure, indicated in whitish. Secondaries yellow centrally, red along abdominal margin. A large black ocellus with blue scales and central white dash. Beyond it, a black median and red sub-marginal line. Expanse, 60—80 mm.

Habitat, Atlantic States westward.

Genus **Thauma** *Hy. Edwards.*

1875—*Thauma* HY. EDWARDS, Proc. Cal. Acad. Sci., Vol. V, p. 265.

T. socialis *Feisthhamel.*

1839—*Ormiscodes socialis* FEISTHHAMEL, Mag. Zool., pl. 20, f. 1.
1853—*Dirphia angulifera* WALKER, Cat. Brit. Mus., pt. VI, p. 1363.
1875—*Thauma ribis* HY. EDWARDS, Proc. Acad. Nat. Sci., Vol. V, p. 265.

Dark cinnamon brown. Costal margin near base, angular discal spot and costal half of t. p. line white. Lower half of t. p. line and outer line of secondaries blackish. Expanse, 50 mm.

Habitat, Peru, Chile; Vancouver Island, B. C.

Genus **Coloradia** *Blake.*

1863—*Colora ia* Blake, Proc. Ent. Soc. Phil., Vol. II, p. 279.

C. pandora *Blake.*

1863—*Coloradia pandora* Blake, Proc. Ent. Soc. Phil., Vol. II, p. 279.

Grayish black, thinly scaled. T. a. and t. p. lines black sub-lunulate bordered with white on costa. Discal spot round, black. Sub-terminal line whitish, undulate. Secondaries sub-hyaline, grayish, tinged with pink along abdominal margin. Expanse, 70 mm.

Habitat, Rocky Mountains to Cascade Range.

~~Subfamily **Lemoniinæ.**~~

Genus **Hemileuca** *Walker.*

1855—*Hemileuca* Walker, Cat Brit. Mus., Vol. VI, p. 1317.
1864—*Euchromia* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 382.
1872—*Euleucophœus* Packard, Rep. Peab. Acad., Vol. IV, p. 88.
1882—*Agyranges* Grote, Can. Ent., Vol. XIV, p. 215.

Synopsis of species.

Prevailing color of wing black, secondaries also partly or largely black.
  Secondaries red with black border and discal dot or largely overspread with black . . . . . **electra.**
  Secondaries without any red.
    A broad, translucent, pale yellow band on secondaries.
      This band narrow . . . . . **maia.**
      This band broad.
        Discal dots slightly bent, thorax blackish . *var.* **nevadensis.**
        Discal dots lunate, thorax largely yellowish, *race* **californica.**
    Secondaries black with a broken white band often obsolete and not translucent.
      White marks on primaries divided by the veins . . **juno.**
      White marks often broken, but not by the veins . . **grotei.**
Prevailing color white or some pale shade; secondaries either immaculate or but slightly marked with black.
  Snow-white with black t. a. and t. p. lines . . . **neumœgeni.**
  Fore wings blackish gray with white bands . . . . **tricolor.**
  All the wings uniform, pale, sordid pink.
    Fore wings with two transverse white lines . . . **sororius.**
    Fore wings immaculate . . . . . **hualapai.**

H. electra *Wright.*

1884—*Hemileuca electra* Wright, Pap., Vol. IV, p. 19.

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* Described by Hy. Edwards (Papilio, Vol. I, p. 100) from Lower California, Mexico, and not yet known from U. S., unless *sororius* and *hualapai* be only forms of one species.

Fore wings black, sub-translucent with white or pinkish triangular discal dot. Basally, centrally and sub-terminally, the black is more or less replaced by pulverulent white, not segregated into well defined marks. Abdomen and secondaries orange red with black border and round discal spot, in the ♂ overspread with black, but not enough to entirely obscure the colors. Thorax black, mixed with pale yellowish hairs. Expanse, 45--50 mm.

Habitat, Southern California.

H. maia *Drury.*

1773—*Attacus maia* DRURY, Ill. Exot. Ent., Vol. II, pl. 24, f. 3.
1775—*Bombyx proserpina* FABRICIUS, Syst. Ent., p. 561.

var. **nevadensis** *Stretch.*

1872—*Hemileuca nevadensis* STRETCH, Zyg. & Bomb. N. A., Vol. I, p. 108.
1886—*Hemileuca maia* var. *lucina* HY. EDWARDS, Ent. Amer., Vol. I, p. 108.

race **californica** *Wright.*

1888—*Hemileuca californica* WRIGHT, Can. Ent., Vol. XX, p. 31.
1893—*Hemileuca artemis* PACKARD, Proc. Am. Phil. Soc., Vol. XXXI, p 172.

Sub-translucent black, with a pale yellowish band on both wings partly or wholly enclosing a black discal spot which contains a yellowish sub-hyaline streak or lunule, less distinct on secondaries. Thorax black, with yellowish hairs on collar and red hairs at end of thorax, or thorax entirely yellowish to the red hairs. Abdomen tipped with red in ♂, yellowish in ♀. The band varies in width, being usually narrow in specimens from the Eastern States, broader in those from the West. Californian specimens are distinguished as indicated in the table. Expanse, 45—70 mm.

Habitat, North America.

H juno *Packard.*

1871—*Hemileuca juno* PACKARD, Rep. Peab. Aca., Vol. IV, p. 87.
1881—*Hemileuca yavapai* NEUMOEGEN, Pap., Vol. I, p. 172.

Black, collar pale yellow and pale hairs on thorax mixed with black. Tip of abdomen red, in the ♂, this color extending more or less up the dorsum even to base of thorax. On primaries a white band divided by the veins opaque, broadest near costa, which it does not reach. A yellowish irregular triangular discal dot surrounded by black, projecting into the white band. A similar band on secondaries but much reduced, pulverulent, often absent. Rarely traces of a discal dot.

Habitat, Mexico to Arizona.

H. grotei *Hopffer.*

1868—*Hemileuca grotei* Grote & Robinson, Trans. Am. Ent. Soc., Vol. II, p. 192.

1873—*Hemileuca diana* Packard, Hayden Surv. Terr., p. 557.

Black; collar white, thorax reddish behind. An outer white band on both wings, narrow, not reaching costa or margin, and on primaries continuous or separated into three patches, the costal one lunate, the median, a sub-triangular discal dot, and the third an elongate spot constricted centrally. Expanse, 45—51 mm.

Habitat, Texas to Colorado.

H. neumœgeni *Hy. Edwards.*

1881—*Euleucophæus neumœgeni* Hy. Edwards, Pap., Vol. I, p. 171.

Snow white; abdomen, legs and central band on thorax brownish red, in the ♀, abdomen white at the end. Antennæ testaceous brown. Fore wings with band gently undulate, t. a. and t. p. lines black, reniform and elongate orbicular yellowish subhyaline spots bordered with black, and fused to the lower side of the former is a black dash. Secondaries with similar discal spot and outer black band. Expanse, 50—60 mm.

Habitat, Arizona.

H. tricolor *Packard.*

1872—*Euleucophæus tricolor* Packard, Rep. Peab. Acad., Vol. IV, p. 89.

Fore wings black, irrorate with white, with broad white arcuate t. a. and straight t. p. band; fringes also white. Discal dot lunate, yellowish, bordered with black. Secondaries immaculate sordid white. Thorax and body with reddish tint intermixed. Expanse, 50 mm.

Habitat, New Mexico.

H. hualapai *Neumœgen.*

1883—*Euleucophæus hualapai* Neumœgen, Pap., Vol. III, p. 138.

Immaculate uniform pale pinkish cream color, the costal edge dark ocherous. Below a brighter pink, as also the shorter hairs on thorax and abdomen; giving the appearance of a pink underground. Antennæ testaceous brown. Expanse, 65 mm.

Habitat, Arizona.

Genus **Pseudohazis** *Grote & Robinson.*

1860—*Pseudohazis* Grote & Robinson, Ann. Lyc. Nat. Hist. N. Y., Vol. VIII, p. 377.

Synopsis of species.

Hind wings deep yellow.
  Fore wings flesh color or carneous white.
    Abdomen black banded . . . . . **eglanterina**
    Black bands obsolete dorsally . . . . . *var.* **nuttalli.**
  Fore wings deep yellow, more or less shaded with light purple.
    Black markings distinct, heavy . . . . . **shastænsis.**
    Black marks faint or obsolete . . . . . *var.* **denudata.**
Hind wings white, or very pale yellow.
  Terminal black dashes on secondaries . . . . . **hera.**
  No terminal black dashes on secondaries . . . . . *var.* **marcata.**

P. eglanterina *Boisduval.*

1852—*Saturnia eglanterina* BOISDUVAL, Ann. Ent. Soc. Fr., (2), Vol. X, p.323.
1877—*P. hera* var. *arizonensis* STRECKER, Lep. Roph. et Het., p. 137.

var. **nuttalli** *Strecker.*

1875—*Pseudohazis nuttalli* STRECKER, Lep. Roph. et Het., p. 107.

Colored as indicated in the synopsis. The black marks on the wings consist of a basal dash on fore wings, a t. a. and t. p. curved bands, a large rounded discal spot (with or without a narrow white crescent) and terminal wedge-shaped spots on the veins. Expanse, 50—60 mm.

Habitat, from the Rocky Mount. to the Sierra Nev. and Arizona.

P. shastænsis *Behrens.*

1880—*P. eglanterina* var. *shastænsis* BEHRENS, No. Am. Ent., Vol. I, p. 62.

var. **denudata** *Neumœgen.*

1891—*H. eglanterina* var. *denudata* NEUMŒGEN, Can. Ent., Vol. XXIII, p.145.

Fore wings purplish, with a streak of indian yellow between veins 4 and 5, or partly overspread with indian yellow, with black marks as in *eglanterina*, or largely suffused by black (from *shastænsis*). Or the black marks may become pulverulent and obscure or largely lost (*var. denudata*).

Habitat, Coast region of California to the Sierra Nevada and northward.

P. hera *Harris.*

1841—*Saturnia hera* HARRIS, Rep. Ins. Mass., p. 286.
1855—*Hemileuca pica* WALKER, Cat. Brit. Mus., pt. VI, p. 1318.

var. **marcata** *Neumœgen.*

1891—*Hemileuca hera* var *marcata* NEUMŒGEN, Can. Ent., Vol. XXIII, p. 146.

Wings yellowish white, head, collar, narrow terminal segmentary bands on abdomen and anal tuft indian yellow. Black marks as in *eglanterina* or the terminal cuneiform marks of secondaries absent (*var. marcata*). Expanse, 55—70 mm.

Habitat, Rocky Mountain region, Eastern Oregon.

(TO BE CONTINUED.)

PRELIMINARY REVISION OF THE BOMBYCES OF AMERICA NORTH OF MEXICO.

By B. Neumœgen and Harrison G. Dyar.

(Continued from page 132.)

Family CERATOCAMPIDÆ.

Synopsis of genera.

Vein 11, arising from a stalk with veins 6 - 8.
  Exterior margin of primaries nearly straight, longer than internal margin . . . . . **Anisota.**
  Exterior margin convex, shorter than interior margin . **Sphingicampa.**
Vein 11 from the sub-costal, before apex of discal cell; size very large.
  Wings elongate, rather narrow; abdomen exceeding secondaries, **Citheronia.**
  Wings broader, apices rectangular; abdomen scarcely exceeding secondaries . . . . . **Basilona.**

Genus **Anisota** *Hübner.*

1822?—*Anisota* Hübner, Verz. bek. Schmett., p. 193.
1841—*Dryocampa* Harris, Rep. Ins. Mass., p. 289.

Synopsis of species.

Colors various shades of brown; a discal dot.
  ♂ similar to ♀, wings opaque . . . . . **stigma.**
  ♂ dissimilar, wings translucent centrally.
    Primaries of ♂ translucent centrally, ♀ with black dots . **senatoria.**
    Primaries ♂ hyaline centrally, ♀ without black dots . **virginiensis.**
Colors pink and yellow or white; no discal dot . . . . **rubicunda.**

A. stigma *Fabricius.*

1775—*Bombyx stigma* Fabricius, Syst. Ent., p. 563.

♂ ♀ Bright ocherous brown, with many black strigose dots, especially on primaries. T. a. and t. p. bands purplish, the former faint. A white discal dot. On secondaries, a median purplish band. The ♂ is a little smaller and darker than the ♀, but closely similar to it. Expanse, 40—50 mm.

Habitat, Atlantic States westward.

A. senatoria *Abbot & Smith.*

1797—*Phalæna senatoria* Abbot & Smith, Lep. Ins. Ga., pl. 57.

♂ Ocherous brown, primaries purplish at base and apex, nearly hyaline centrally. Secondaries produced at anal angle almost

square. Lines obsolete, but white discal spot very distinct. Expanse, 30—37 mm.

♀ Very dissimilar to ♂. It is exactly like the ♀ of *stigma*, but usually slightly less dotted with blackish. Expanse, 53 55 mm.

Habitat, Atlantic States westward.

A. virginiensis *Drury.*

1773—*Bombyx virginensis* DRURY, Ill. Exot. Ent., Vol. II, pl. 13, f. 2.
1789—*Bombyx astymone* OLIVER, Encycl. Meth., Vol. V, p. 43.
1797—*Phalæna pellucida* ABBOT & SMITH, Lep. Ins. Ga., pl. 58.

♂ Like *senatoria*, but darker colored, and center of primaries hyaline. ♀ Purplish brown, especially purplish in marginal space. Wings sub-translucent, lines faint, discal dot distinct. No dots on the wings.

Habitat, Atlantic States westward.

A. rubicunda *Fabricius.*

1793—*Bombyx rubicunda* FABRICIUS, Ent. Syst., Vol. III (1), p. 429.

race **alba** *Grote.*

1874—*Dryocampa rubicunda* var. *alba* GROTE, Bull. Buff. Soc., Vol. II, p. 183.
1875—*Dryocampa pallida* BOWLES, Can. Ent., Vol. VII, p. 108.

Light yellow. Basal and marginal spaces on primaries, and a diffused and faint sub-marginal line on secondaries rose pink. Expanse, ♂ 40—45 mm., ♀ 50—55 mm.

Habitat, Atlantic States.

The race *alba* is entirely creamy white above.

Habitat, Mississippi Valley to Canada.

Genus **Sphingicampa** *Walsh.*

1864—WALSH, Proc. Bost. Soc. Nat. Hist., Vol. IX, p. 290.

Synopsis of species.

Secondaries without discal dot.
  Primaries usually heavily irrorate, t. p. line diffuse.
    T. a. line faint or absent, discal dots usually present . **bicolor.**
    T. a. line as distinct as t. p. line; no discal dots . **quadrilineata.**
  Primaries slightly irrorate; t. p. line distinct, straight, . . **bisecta.**
Secondaries with large round black discal dot.
  A dark obscure transverse line on primaries . . . **heiligbrodti.**
  Transverse lines of primaries white . . . . . **albolineata.**

S. bicolor *Harris.*

1841—*Dryocampa bicolor* HARRIS, Rep. Ins. Mass., p. 203.
1864 *Sphingicampa distigma* WALSH, Proc. Bost. Soc. Nat. Hist., Vol. IX, p. 290.

var. **suprema** *Neumœgen.*

1885—*Sphingicampa bicolor* var. *suprema* Neumœgen, Ent. Amer., Vol. I, p. 94.

var. **immaculata** *Jewett.*

1882—*Adelocephala bicolor* var. *immaculata* Jewett, Pap., Vol. II, p. 144.

Primaries ocherous brown, shading into dark flesh pink along external and internal margins, nearly covered with strigose slate gray dots. Two white discal dots and a diffuse slate gray t. p. band. The rest of the body and hind wings dark pink except base of secondaries and a median band, which are carmine red. Expanse, 45--50 mm.

The *var. suprema* is entirely sordid cinereous instead of pinkish, secondaries carmine except the outer border.

The *var. immaculata* lacks the dots on the wings.

Habitat, Mississippi Valley.

S. quadrilineata *Grote & Robinson.*

1867—*Adelocephala quadrilineata* Grote & Robinson, Trans. Am. Ent. Soc., Vol. I. p. 11.

Closely resembling *bicolor* but the primaries less covered with strigæ and those that are present more clouded. T. a. and t. p. lines smoky blackish, equally distinct. A faint discal cloud without white dots. Secondaries rose color from base to near margin, but yellowish at the edge. ♀ Antennæ simple. Expanse, 70 mm.

Habitat, Mexico.

S. bisecta *Lintner.*

1879—*Anisota bisecta* Lintner, Can. Ent., Vol. XI, p. 10.

var. **nebulosa** *Neumœgen.*

1890—*Sphingicampa bisecta* var. *nebulosa* Neumœgen, Ent. Amer., Vol. VI, p. 63.

Ocherous brown. On primaries, a t. a. angulate and t. p. straight oblique well defined purplish black lines, the wing faintly covered with purplish strigae, or almost without them. A faint discal cloud. Secondaries more or less covered by carmine hairs. In the *var. nebulosa*, the whole fore wing is thickly covered by diffuse smoky black strigæ. Expanse, 65—70 mm.

Habitat, Texas.

S. heiligbrodti *Harvey.*

1877—*Anisota heiligbrodti* Harvey, Can. Ent., Vol. IX, p. 110.

Primaries iron gray, white and black scales mixed. T. a. line faint. T. p. line crenate. Two white discal dots, the upper fainter or absent. Secondaries and abdomen red, slightly shaded with gray. A large round black discal spot. Outer mesial band faint. Edge of wing iron gray. Antennæ testaceous. Expanse, 65 mm.

Habitat, Arizona.

S. albolineata *Grote & Robinson.*

1866—*Adelocephala albolineata* GROTE & ROBINSON, Proc. Ent. Soc Phil., Vol. VI, p. 7.

1872—*Adelocephala raspa* BOISDUVAL, Ann. Soc. Ent. Belg., Vol. XV, p. 93.

Thorax and abdomen above, and primaries bright yellow, the latter finely mixed with dark scales. T. a. and t. p. lines white, t. a. line bent in to base of wing, not reaching the internal margin; t. p. line very oblique. A white discal spot. Secondaries deep pink; a black discal spot and white sub-marginal stripe. Costal and external margin dull whitish. Expanse, 65 mm.

Habitat, Mexico.

Genus **Citheronia** *Hübner.*

1822?—*Citheronia* HÜBNER, Verz bek. Schmett., p. 153.
1822?—*Eacles* HÜBNER, Verz. bek. Schmett., p. 153.
1834—*Ceratocampa* HARRIS, Cat. Ins. Mass., p. 591.
1841—*Dorycampa* DUNCAN, Nat. Lib. Ex. Moths, p. 158.

Synopsis of species.

Large, veins lined with red or yellow.
  Body and markings on wings partly yellow, partly red . . . **regalis.**
  Body and markings entirely red . . . . . *var.* **infernalis.**
  Body and markings entirely yellow . . . . . *var.* **sængeri.**
Smaller, dark smoky brown . . . . . **sepulchralis.**

C. regalis *Fabricius.*

1793—*Bombyx regalis* FABRICIUS, Ent. Syst., Vol. III (1), p. 436.
1797—*Phalæna regia* ABBOT & SMITH, Lep. Ins. Ga., Vol. II, pl. 61.

var. **infernalis** *Strecker.*

1884—*Citheronia infernalis* STRECKER, Pap. Vol. IV, p. 73.

var. **sængeri** *Neumœgen.*

1891—*C. regalis* var. *sængeri* NEUMŒGEN, Ent. News, Vol. II, p. 151.

Bright red above; a double line on collar; two divergent bands on thorax and anterior edges of abdominal segments, light yellow.

Primaries slate gray, the veins broadly lined with red. A basal, discal and outer row of ovate yellow spots. The outer row consists of about seven intervenular spots of varying size, the costal ones largest; sometimes traces of a median lunulate, diffuse, yellow band. Secondaries largely red, yellow at base and centrally along costa, the gray color appearing faintly between the veins toward outer margin. Expanse, 115—145 mm.

Habitat, Atlantic States.

C. sepulchralis *Grote & Robinson.*

1865—*Citheronia sepulchralis* Grote & Robinson, Proc. Ent. Soc. Phil., Vol. IV, p. 222.

Even, dark, smoky, purplish brown; basal half of secondaries pinkish. On both wings obscure discal spots and outer waved, darker, smoky band. Antennæ testaceous. Expanse, 75—80 mm.

Habitat, Southern States.

Genus **Basilona** *Boisduval.*

1868—*Basilona* Boisduval, Ann. Ent. Soc. Fr. (4), Vol. VIII, p. 317.

Synopsis of races.

Ground color yellow.
Wing sparsely covered with blackish brown strigose dots . **imperialis.**
Wing heavily covered with such dots . . . *var.* **punctatissima.**
Ground color deep russet . . . . . *race* **nobilis.**

B. imperialis *Drury.*

1773—*Attacus imperialis* Drury, Ill. Ex. Ent., Vol. I, pl. 9, ff. 1, 2.
1797—*Phalæna imperatoria* Abbot & Smith, Lep. Ins. Ga., Vol. II, pl. 55.
1805—*Bombyx didyma* Beauvois, Ins. Afr. Amér., p. 52, pl. 20.

var. **punctatissima** *Neumœgen.*

1891—*Eacles imperialis* var. *punctatissima* Neumœgen, Ent. News, Vol. II, p. 150.

race **nobilis** *Neumœgen.*

1891—*E. imperialis* var. *nobilis* Neumœgen, Ent. News, Vol. II, p. 150.

Light yellow with the following marks in brownish purple. Diffuse strigæ on primaries, and outer part of secondaries; tibiæ, patagia, center of thorax, two lateral posterior patches on the thorax and a dorsal band on abdomen, absent on the edges of the segments and containing a row of yellow dorsal spots. On primaries a broad undulate t. a. line, two discal spots and outer transverse line running to apex. In the ♂ the t. a. line is further

from the base than in the ♀, and the basal space and part of the marginal space is shaded with purple. On secondaries, the same markings, but less distinct, and only one discal spot. Expanse, 115—135 mm.

Habitat, Atlantic States westward; of *race nobilis*, Texas.

Family LASIOCAMPIDÆ.

Synopsis of sub-families and genera.

Vein 2 of primaries arising remote from base of wing . [see Drepanidæ].
Vein 2 of primaries arising near base of wing.
Vein 8 of secondaries outwardly united to sub-costal vein by a cross vein, forming a large cell . . **Gastropachinæ.**
Fore wings with a notch at internal angle . . **Phyllodesma.**
Fore wings entire . . . . . **Heteropacha.**
Vein 8 of secondaries free outwardly; intercostal cell small, **Lasiocampinæ.**
Vein 7 of secondaries arising from sub-costal toward apex of cell.
Vein 8 of primaries arising before apex of cell, free or on a stalk with 9 and 10 . . . . **Clisiocampa.**
Vein 8 arising beyond end of cell, on a stalk with 6 and 7.
Thorax hairy, normal.
Antennæ long and slender . . . **Hypopacha.**
Antennæ shorter, the pectinations decreasing in length toward the tip . . . . **Artace.**
Thorax with a patch of curled, scale-like hairs . **Tolype.**
Vein 7 of secondaries arising with vein 8 from intercostal cell.
Vein 8 of primaries arising before apex of cell, free or on stalk with vein 7 . . . . **Dendrolimus.**
Vein 8 arising beyond end of cell, on a stalk with 6 und 7 . . . . . **Edwardsimemna.***

Sub-family GASTROPACHINÆ.

Genus **Phyllodesma** *Hübner.*

1822? - *Phyllodesma* HÜBNER, Verz. bek. Schmett., p. 190.
1866—*Epicnaptera* RAMBUR, Cat. Lep. And., p. 344.
1869—*Ammatocampa* WALLENGREN, Skand. Het., Vol. II, p. 113.

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* *Edwardsimemna* gen. n. (type *Gloveria jalapæ* Hy. Edw.) Fore wings a in *Dendrolimus* except that veins 6 to 8 are on a long stalk; stalk of 9 and 10 equally long; hind wings vein 6 from apex of cell, veins 7 and 8 together from the end of the short, rounded intercostal cell; humeral veins feeble. ♀ antennæ serrate. Palpi surpassing the front, projecting, dependent, hairy. Wings rounded-outer margin crenulate.

Synopsis of species.

Color rusty brown or gray.
  Primaries with white shades . . . . . **americana.**
  Wings largely or wholly gray . . . . . *race* **californica.**
  Wings brown, without white shades.
    Sexes concolorous or nearly so . . . . *var.* **ferruginea.**
    ♀ more luteous than ♂ . . . . . *race* **roseata.**
Color contrasting yellow and brown . . . . . **dyari.**

P. americana *Harris.*

1841—*Gastropacha americana* Harris, Rep. Ins. Mass., p. 273.
1855—*Gastropacha occidentis* Walker, Cat. Brit. Mus., Vol. VI, p. 1392.
1868—*Lasiocampa carpinifolia* Boisduval, Ann. Ent. Soc. Belg., Vol. XII, p. 83.

var. **ferruginea** *Packard.*

1864—*Gastropacha ferruginea* Packard, Proc. Ent. Soc. Phil., Vol. III, p. 386.

race **roseata** *Stretch.*

1872—*Gastropacha roseata* Stretch, Zyg. & Bomb. N. A., pl. 4, f. 12.
1872—*Gastropacha mildei* Stretch, Zyg. & Bomb. N. A., p. 113.

race **californica** *Packard.*

1872—*Gastropacha californica* Packard, Rep. Peab. Acad., Vol. IV, p. 91.

Ferruginous brown, frosted with white scales. T. a. and t. p. lines slender, lunulate, blackish. A slight discal dot. S. t. line reddish, bordered by a white shade. A mesial line and discal dot on secondaries followed by a white shade and obscure sub-marginal band. The race *californica* is gray, more or less tinged with brown. Expanse, 27—35 mm.

Habitat, Atlantic States to Canada and Pacific Northwest; of race *californica*, Rocky Mountains to Southern California; of race *roseata*, California.

P. dyari *Rivers.*

1893—*Phyllodesma dyari* Rivers, Can. Ent., Vol. XXV, p. 144.

♂ Pale yellowish ocher; outer part of fore wings rosy brown, the color extending to the middle one of three lines of dusky spots which cross the disc. A pale mesial band on hind wings. ♀ Paler than the ♂ with distinct emarginations between the terminations of the venules. Expanse, 38—55 mm.

Habitat, Western Texas, Mexico (?).

Genus **Heteropacha** *Harvey.*

1874—*Heteropacha* Harvey, Bull. Buff. Soc., Vol I, p. 262.

H. rileyana *Harvey.*

1874—*Heteropacha rileyana* HARVEY, Bull. Buff. Soc., Vol. I, p. 262.

Gray; median space blackish, secondaries brownish. T. a. and t. p. lines obscure, whitish, sub-dentate, defined by blackish scales. A sub-terminal row of venular dots; fringe black spotted. Expanse, 27—32 mm.

Habitat, Mississippi Valley.

[The description by Harvey of the venation of secondaries is erroneous.]

Sub-family LASIOCAMPINÆ.

Genus **Clisiocampa** *Curtis.*

1828—*Clisiocampa* CURTIS, Brit. Ent., Vol. V, pl. 229.

Synopsis of species.

Sexes concolorous or nearly so; wings crossed by a pair of darker lines, rarely obsolete, not dentate, or by a broad brown band, **disstria** *race* **erosa.**

Sexes concolorous or not; the wings crossed by paler lines except when the ground color is pale.

Sexes alike; wings chocolate brown with straight white bands, **americana.**

Sexes alike or the ♂ pale; wings gray or chocolate brown, rarely luteous; bands often denticulate . . . . . **fragilis.**

Sexes discolorous, the ♀ normally paler than the ♂, but ♂ sometimes also pale; lines dark in the pale forms. more or less denticulate . **pluvialis, californica, ambisimilis.**

Sexes discolorous; ♂ very pale, ♀ dark, but both with darker lines on fore wings . . . . . **constricta.**

C. disstria *Hübner.*

1822?—*Malacosoma disstria* HÜBNER, Verz. bek. Schmett., p. 122.

1868—*Bombyx drupacearum* BOISDUVAL., Ann. Ent. Soc. Belg., Vol. XII, p. 82.

var. **sylvatica** *Harris.*

1841—*Clisiocampa sylvatica* HARRIS, Rep. Ins. Mass., p. 271.

var. **thoracicoides** *Neumœgen & Dyar.*

1893—*Clisiocampa disstria* var. *thoracicoides* NEUMŒGEN & DYAR, Journ. N. Y. Ent. Soc, Vol. I, p. 30.

Light yellowish brown, the ♀ paler; fore wings crossed by two dark brown bands. In the *var. sylvatica*, the space between these bands is uniformly filled in with brown, and in the *var. thoracicoides*, the bands are very obscure. A form with irrorate wings and dark secondaries occurs in Texas. Expanse, 18—40 mm.

Habitat, Atlantic States to Mississippi Valley.

race **erosa** *Stretch.*

1881—*Clisiocampa erosa* STRETCH, Pap., Vol. I, p. 64.

var. **sylvaticoides** *Neumœgen & Dyar.*

1893—*Clisiocampa erosa* var. *sylvaticoides* NEUMŒGEN & DYAR, Journ. N. Y. Ent. Soc., Vol. I, p. 30.

var. **thoracica** *Stretch.*

1881—*Clisiocampa thoracica* STRETCH, Pap., Vol. I, p. 68.

var. **perversa** *Neumœgen & Dyar.*

1893—*Clisiocampa erosa* var. *perversa* NEUMŒGEN & DYAR, Journ. N. Y. Ent. Soc., Vol. I, p. 30.

Race *erosa:* yellowish brown, the ♀ exactly like ♀ *disstria*, the ♂ usually darker than ♂ *disstria*. In the *var. sylvaticoides*, the space between the lines is partially filled in with dark brown; the *var. thoracica* has the lines obscure, and the *var. perversa* has basal and marginal spaces shaded with brown. Expanse, 19—35 mm.

Habitat, California and Pacific northwest.

C. americana *Fabricius.*

1793—*Bombyx americana* FABRICIUS, Ent. Syst., Vol. III, p. 433.
1855—*Clisiocampa decipiens* WALKER, Cat. Brit. Mus., pt. VI, p. 1488.
1868—*Bombyx frutetorum* BOISDUVAL, Ann. Ent. Soc. Belg., Vol. XII, p. 82.

♂ ♀ Walnut brown (Ridgway, III, 7), the thorax often grayish. Two parallel oblique white lines on primaries, either approximate or remote, the space between them often heavily dusted with white. In some males, the ground color is irregularly defined beyond the outer line. Secondaries immaculate. Fringe of both wings irregularly white spotted.

Habitat, Atlantic States westward; Canada to Florida and Texas.

C. fragilis *Stretch.*

1881—*C. fragilis* STRETCH, Papilio, Vol. I, p. 64.
1882—*C. incurva* HY. EDWARDS, Papilio, Vol. II, p 125.
1893 *C. mus* var. *discolorata* NEUMŒGEN, Can. Ent., Vol. XXV, p. 4.

var. **mus** *Neumœgen.*

1893—*C. mus* NEUMŒGEN, Can. Ent., Vol. XXV, p. 4.

var. **constrictina** *Neumœgen & Dyar.*

1893—*C. incurva* var. *constrictina* NEUMŒGEN & DYAR, Journ. N. Y. Ent. Soc., Vol. I, p. 30.
1893—*C. fragilis* var. *lutescens* NEUMŒGEN & DYAR, Journ. N.Y. Ent. Soc., Vol. I, p. 31.

var. **perlutea** *Neumœgen & Dyar.*

1893—*C. fragilis* var. *perlutea* NEUMŒGEN & DYAR, Journ. N.Y. Ent. Soc., Vol. I, p. 31.

Soft chocolate brown to walnut brown, gray brown or blackish, the lines pale, often markedly denticulate. In the ♂ the pale luteous color of the lines may spread and predominate (*var. constrictina*) or cover the whole wing (*var. perlutea*). A very variable species.

Habitat, Rocky Mountains from their eastern slope to the Sierras; Canada to Mexico. The peculiar gray from (*var. mus*) occurs in Utah.

C. pluvialis *Dyar.**

1893 – *Clisiocampa pluvialis* DYAR, Can. Ent., Vol. XXV, p. 42.

Greatly resembling *californica*. The ♂ tends to be darker in color than either *californica* or *fragilis*, though the character is not of diagnostic value. No luteous males have been observed; otherwise the description of *californica* will apply. Separated on larval characters.

Habitat, the Pacific northwest.

C. californica *Packard.**

1864 – *Clisiocampa californica* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 387.

1868 – *Bombyx pseudoneustria* BOISDUVAL., Ann. Ent. Soc. Belg., Vol. XII, p. 82.

♂ Dark chocolate brown with a faint pale band on secondaries. Lines on fore wings luteous yellow, gently curved, sharply limited towards center of wing, but spreading toward base and outer margin, the outer line sub-crenulate. This pale color may spread till the whole wing is luteous yellow, crossed by two brown lines.

♀ Paler than the male, the ground color consequently normally luteus yellow, dusted with brown and crossed by two brown lines, the outer crenulate. The brown scales may predominate, giving a form somewhat closely resembling the male. Secondaries pale or dark. Expanse, 25—35 mm.

Habitat, Coast region of California

C. ambisimilis *Dyar.**

1893 – *Clisiocampa ambisimilis* DYAR, Can. Ent., Vol. XXV, p. 40.

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* Lava : A dorsal pale line, sometimes obsolete.

Lateral region heavily blue shaded . . **ambisimilis.**

Lateral region with no blue shade . . . **californica.**

A dorsal row of elliptical blue spots . . . **pluvialis.**

Like *californica* in markings, so far as observed. Separated on larval characters.

Habitat, Coast region of California.

C. constricta *Stretch.*

1881—*Clisiocampa constricta* Stretch, Papilio, Vol. I, p. 65.
1881 - *Clisiocampa strigosa* Stretch, Papilio, Vol. I, p. 67.
1865—*Clisiocampa ‖ californica* Walker, Cat. Brit. Mus., Vol. XXXII, p. 572.

♂ Creamy buff with two brown lines on primaries. ♀ Walnut brown mixed with whitish, with two dark brown lines on primaries, the space between them rather darker than the rest of the wing. Both sexes very uniform and strongly contrasting. Expanse, 25—35 mm.

Habitat, Hilly and Mountainous parts of California.

Genus **Hypopacha** *Neumœgen & Dyar.*

1893—*Hypopacha* Neumœgen & Dyar, Journ. N.Y. Ent. Soc., Vol. I, p. 29.

H. grisea *Neumœgen.*

1882—*Cnethocampa grisea* Neumœgen, Papilio, Vol. II, p. 134.

Dark gray with waved pale t. a. and t. p. lines bordered on both sides by faint black shades. S. t. line blackish, arcuate, retracted at veins 4—6. Secondaries immaculate paler gray. Expanse, 27 mm.

Habitat, Arizona.

Genus **Artace** *Walker.*

1855 *Artace* Walker, Cat. Brit. Mus., pt. VI, p. 1491.

A. punctistriga *Walker.*

1855 *Artace punctistriga* Walker, Cat. Brit. Mus., Vol. VI, p. 1491.
1874 *Titya rubripalpis* Felder, Reise d. Novara Lep., Vol. IV, pl. 84, f.8.

White, with black venular dots on primaries. These are arranged in six rows; the sub-basal of two dots only, the t. a., median, and t. p. distinct, with two dots at end of cell; s. t. row smoky, faint; terminal row small. Expanse, 22—30 mm.

Habitat, Southern States to Mississippi Valley, to New York.

Genus **Tolype** *Hübner.*

1822?—*Tolype* Huebner, Verz. bek. Schmett., p. 189.
1856 *Planosa* Fitch, Rep. Ins. N. Y., Vol. II, p. 268.

Synopsis of species.

Thorax of ♂ white; size large . . . . . **velleda.**
Thorax of ♂ black or gray.
♀ Similar to ♂, slightly paler; size midium . . . **distincta.**
♀ Very dissimilar to ♂; ♂ dark, ♀ very pale; size smaller . **laricis.**

T. velleda *Stoll.*

1791--*Bombyx velleda* STOLL, Suppl. Cramer, pl. 41, f. 4.

Thorax white, central tuft blackish brown, abdomen pale gray banded with darker gray. Fore wings light gray, shading into blackish in median and sub-terminal spaces. Base of wings white; t. a. line narrow, white; t. p. line double, sinuate; s. t. line distinct, even, white, sinuate, forming a large curve from apex to vein 6; terminal lines and outer part of fringe on both wings white. Secondaries pale gray with whitish mesial and s t. lines. Expanse, 30 –50 mm.

Habitat, Atlantic States westward.

T. distincta *French.*

1890 - *Tolype distincta* FRENCH, Can. Ent., Vol. XXII, p. 45.

Of a slaty gray, the thorax gray in the ♂, partly white only in ♀. Lines as in *velleda*, but narrower, almost linear, defined by dark gray shades. The sexes are similar as in *velleda*, the ♀ slightly paler. Expanse, 35 mm.

Habitat, Colorado.

T. laricis *Fitch.*

1856 - *Planosa laricis* FITCH, Rep. Ins. N. Y., Vol. II, p. 262.

1863—*Gastropacha velleda* var. *minuta* GROTE, Proc. Ent. Soc. Phil., Vol. II, p. 433.

♀ Thorax and primaries pure white, except the brown crest, and the sub-terminal and terminal part of the normal brown markings of primaries. Secondaries and abdomen very pale gray.

♂ Black; wings dark blackish gray, with three paler bands which correspond to mesial, t. p. and s. t. lines, the two outer undulate. Expanse, 25—30 mm.

Habitat, Atlantic States westward.

Genus **Dendrolimus** *Germar.*

1824—*Dendrolimus* GERMAR, Syst. Prodr., p. 48.

1872—*Gloveria* PACKARD, Rep. Peab. Acad., Vol. IV, p. 89.

1881 *Quadrina* GROTE, Papilio, Vol. I, p. 75; 1886--SMITH, Ent. Amer., Vol. II, p. 124.

Synopsis of species.

Intercostal cell of secondaries short, reaching half way to end of discal cell.

Vein 6 of primaries free or on a short stalk with vein 8; vein 8 free or more often, on a staik with vein 7 when 6 is free, **dolores.**

Veins 6 and 7 on a stalk, usually long, rarely none; vein 8 free.

Gray, sub-terminal line sharply and evenly angled , **arizonensis.**

Brown gray, sub-terminal lines obscure . . . . **gargamelle.**

Intercostal cell reaching nearly to apex of discal cell . . . **diazoma.**

D. dolores *Neumœgen & Dyar.*

1893 - *Dendrolimus dolores* Neumœgen & Dyar, Ent. News, Vol. IV, p. 290.

♀ Similar to *D. arizonensis*, but the transverse lines are more obscure, and the sub-terminal is roundedly undulate, not dentate, the outer angles of the dentations of *arizonensis* being lost. In the interspace between veins 3 and 4 there is a larger projection of the line than elsewhere. ♂ unknown.

Habitat, Colorado.

D. arizonensis *Packard.*

1872—*Gloveria arizonensis* Packard, Rep. Peab. Acad , Vol. IV, p. 90.

1884—*Gloveria dentata* Hy. Edwards, Papilio, Vol. IV, p. 107.

♀ Gray, overspread with whitish except in terminal space; secondaries and abdomen brownish. On primaries a white discal dot; t. a. and t. p. lines dark, straight, the t. p. line bent deeply inwards opposite cell; sub-terminal line very distinct, sharply and evenly dentate. Expanse, 95 mm. ♂ unknown.

Habitat, Arizona, Mexico.

D. gargamelle *Strecker.*

1885—*Lasiocampa gargamelle* Strecker, Proc. Acad. Nat. Sci. Phil., 1884, p. 286.

1884—*Gloveria arizonensis* ♂ Hy. Edwards, Papilio, Vol. IV, p. 107.

♀ Dark brown, the fore wings grizzled with white hairs; very uniform in tint the sub-terminal line undulate and somewhat irregular, dark, bordered inwardly by pale scales. A round white discal dot. Hind wings brown, darker than in the ♀, with no trace of any paler band. Abdomen dark brown. Expanse, 85 mm.

♂ Brown; fore wings brown with white hairs intermixed, the basal third and outer margin darker, more brownish; median space somewhat ashen Transverse lines faint; the sub-terminal irregular as in the ♀. Secondaries brown, with a paler, somewhat ochraceous mesial band; fringe white Expanse, 57 mm

Habitat, Arizona.

[Our ♀ specimens do not exactly agree with Dr. Strecker's description.]

D. diazoma *Grote.**

1881 - *Quadrina diazoma* Grote, Papilio, Vol. I, p. 75.

1884—*Gloveria? diazoma* Hy. Edwards, Papilio, Vol. IV, p. 109.

♀ Wings nearly concolorous, brownish, brighter at base. A curved, even, dark, extra mesial shade line on primaries; an un-

* Through the courtesy of Prof. J. H. Comstock, we have been able to examine a photograph of the venation of this species.

even, broken sub-terminal line. Hind wings with a reddish shade, which obtains slightly on apex of primaries. Expanse, 95 mm.

Habitat, New Mexico [Grote.]

Family COSSIDÆ.

Synopsis of sub-families and genera.

Vein 8 of secondaries united to sub-costal by a cross-vein.
- Antennæ of ♂ pectinated for the basal half; frenulum distinct, **Zeuzerinæ.**
- Antennæ of ♂ pectinated to th etip; frenulum rudimentary, . **Cossinæ.**
  - Sexes approximate in size . . . . . **Cossus.**
  - Sexes disproportionate and differently marked . . . **Prionoxystus.**

Vein 8 of secondaries free from the base . . . . . **Hypoptinæ.**
- Vein 11 of primaries arising from the accessory cell . . **Cossula.**
- Vein 11 from the discal cell . . . . . **Hypopta.**

Subfamily ZEUZERINÆ.

Genus **Zeuzera** *Latreille.*

1804—*Zeuzera* LATREILLE, Nouv. Dict. d'Hist. Nat., Vol. XXIV, p. 186.
1822?—*Latagia* HUEBNER, Verz. bek. Schmett., p. 196.

Synopsis of species.

Fore wings covered with round blackish spots . . . . **pyrina.**
Fore wings with blackish strigæ . . . . . **canadensis.**

C. pyrina *Linnæus.*

1761—*Noctua pyrina* LINNÆUS, Faun. Suec., p. 306.
1751—*Phalæna hypocastani* PODA, Mus. Grace, p. 88.
1767—*Noctua æsculi* LINNÆUS. Syst. Nat., Vol. I (2), p. 833.
1785—*Phalæna hilaris* FOUCROY, Ent. Paris, Vol. II, p. 306.
1892—*Zeuzera decipiens* KIRBY, Cat. Lep. Het., Vol. I, p. 871.

White, thorax with six round black spots, the two anterior sometimes united; abdomen black banded with two black spots at base above. Primaries thickly covered with rounded intervenular black spots. Secondaries with smaller and less distinct spots, absent at anal angle. Expanse, 45—60 mm.

Habitat, Europe; vicinity of New York City.

Z. canadensis *Herrich-Schäffer.*

1854—*Zeuzera canadensis* HERRICH-SCHÆFFER, Ausser. Schmett., Vol. I, f. 168.

Thorax ochraceous, abdomen paler, more whitish; primaries white, heavily covered over the basal half below median vein and outwardly centrally almost to margin with a blackish shade; costa tinged with brown. All the wings thickly covered with partly

confluent, short, transverse black strigæ. Secondaries white with a very few strigæ at outer margin, otherwise immaculate. Expanse about 30 mm.

Habitat, Canada. [Herrich-Schäffer.]

Sub-family Cossinæ.

Genus **Cossus** *Fabricius.*

1794—*Cossus* Fabricius, Ent. Syst., Vol. III (2), p. 8.
1810?—‖ *Teredo* Huebner, Tentatmen, p. 1.
1866—*Trypanus* Rambur, Cat. Lep. And., Vol. II, p. 326.

Synopsis of species.

Size large, expanse at least 45 mm.
  Dark colored; collar black . . . . . **centerensis**
  Paler, collar gray or white.
    Collar nearly white, primaries with very distinct transverse black lines . . . . . **undosus.**
    Collar yellowish gray; clouded along costa.
      Indistinctly reticulated, with prominent median line . **populi.**
      Distinctly reticulated with black; mottled . . . . **orc.**
Size smaller, expanse not more than 40 mm.
  Pale, with distinct transverse lines . . . . . **perplexus.**
  Darker, shaded, with no evident lines . . . . . **mucidus.**

C. **centerensis** *Lintner.*

1879—*Cossus centerensis* Lintner, Can. Ent., Vol. IX, p. 129.

Fore wings heavily reticulated, some transverse lines more prominent than others; the markings black on a sordid white ground which is also powdered with black; basal half obscured. Secondaries translucent with merest trace of recticulations. Abdomen blackish, obscurely banded with pale. Expanse, 50—65 mm.

Habitat, Atlantic States.

C. **undosus** *Lintner.*

1878—*Cossus undosus* Lintner, Rep. N. Y. State Mus., Vol. XXX, p. 243.
1890—*Cossus brucei* French, Can. Ent., Vol. XXII, p. 44.

Pale gray, the reticulations much as in *C. centerensis*, but the transverse lines are more strongly marked, especially a median and sub-terminal one, and the white ground is less obscured by brown powderings. Secondaries opaque white, finely and densely recticulated. Expanse, 60—75 mm.

Habitat, Rocky Mountain region.

C. populi *Walker.*

1856—*Cossus populi* WALKER, Cat. Brit. Mus., pt. VII, p. 1515.
1882—*Cossus angrezi* BAILEY, Papilio, Vol. II, p. 93.

Collar and head yellowish gray, thorax partly black. Fore wings with nearly white ground shaded with blackish, with black and reticulated lines, those crossing the center of the wings most distinct. Hind wings yellowish gray, mottled with blackish outwardly. Expanse, 60—80 mm.

Habitat, Nevada, Hudsons Bay.

C. orc *Strecker.*

1893—*Cossus orc* STRECKER, Proc. Acad. Nat. Sci. Phil., p. 282.

Closely similar to *C. populi* but the lines more reticulated, less strigose, giving the fore wing a mottled appearance. Otherwise the species are alike. Expanse, 55—75 mm.

Habitat, The Pacific northwest.

C. perplexus *Neumœgen & Dyar.*

1893—*Trypanus perplexus* NEUMŒGEN & DYAR, Journ. N. Y. Ent. Soc., Vol. I, p. 31.

Ash gray; reticulations becoming obsolete, irregular and branched; median and sub-terminal lines remain. Secondaries unicolorous, pale cinereous, sub-translucent. Expanse, 33 mm.

Habitat, Colorado.

C. mucidus *Hy. Edwards.*

1882—*Cossus mucidus* HY. EDWARDS, Papilio, Vol. II, p. 126.

Reticulations converted into dense transverse strigæ, the fore wings all obscured by blackish shading except the basal costal half where ground color appears, sordid white. Secondaries sordid white, minutely strigose, appearing pulverulent. Expanse, 36—40 mm.

Habitat, Arizona.

Genus **Prionoxystus** *Grote.*

1882—*Prionoxystus* GROTE, New Check-list, p. 63.
1874—‖ *Xystus* GROTE, Proc. Amer. Phil. Soc., Vol. XIV, p. 262.

Synopsis of species.

Wings opaque, secondaries of ♂ partly orange . . . . . **robiniæ.**
Secondaries of ♀ also orange tinted . . . . . *var.* **quercus.**
Wings sub-hyaline, no orange . . . . . **macmurtrei.**

P. robiniæ *Peck.*

1818—*Cossus robiniæ* Peck, Mass. Agric. Rep. Journ., Vol. V, p. 67.
1856—*Cossus plagiatus* Walker, Cat. Brit. Mus., pt. VII, p. 1515.
1864—*Xyleutes crepera* Grote, Proc. Ent. Soc. Phil., Vol. III, p. 388.
1878—*Cossus reticulatus* Lintner, Rep. N. Y. Mus., Vol. XXX, p. 242.

var. **quercus** *Ehrmann.*

1893—*Prionoxystus robiniæ* var. *quercus* Ehrmann, Can. Ent., Vol. XXV, p. 257.

♂ Dull cinereous, patagia and collar bordered with black. Primaries densely reticulated with black, forming a broad diffuse band of black from internal margin to apex, running also on to discal cell. Secondaries golden yellow, black on basal half, costal and internal margins and narrow outer edge. Expanse, 50—55 mm.

♀ Paler, almost white; reticulations less dense so that the black band is broken up into several isolated and variable patches. Secondaries blackish, the reticulations of under side appearing by transparency. Expanse, 55—70 mm.

Habitat, Atlantic States westward.

P. macmurtrei *Guérin.*

1829—*Cossus macmurtrei* Guérin, Icon. R. Anim. Ins., pl. 85, f. 2.
1858—*Cossus querciperda* Fitch, Rep. Ins. N. Y., Vol. V, p. 10.

♂ Very small, wings hyaline with traces of the black transverse reticulations; secondaries hyaline with narrow black border, broader on internal margin.

♀ With very large abdomen; wings whitish hyaline, the reticulations mostly transverse, recalling *C. undosus*. Secondaries subhyaline, immaculate above. Expanse, 60 mm.

Habitat, Atlantic States.

Sub-family Hypoptinæ.

Genus **Cossula** *Bailey.*

1882—*Cossula* Bailey, Papilio, Vol. II, p. 93.
1888—*Inguromorpha* Hy. Edwards, Ent. Amer., Vol. III, p. 182.

C. basalis *Walker.*

1856—*Cossus basalis* Walker, Cat. Brit. Mus., pt. VII, p. 1523.
1876—*Cymatophora magnifica* Strecker, Proc. Acad. Nat. Sci. Phil., p. 151.
1882—*Cossus magnifica* Bailey, Papilio, Vol II. p. 93.
1888—*Inguromorpha slossonii* Hy. Edwards, Ent. Amer., Vol. III, p. 183.

♂ Pale gray. At base of primaries, a deep black transverse band; at internal angle and apex are distinct lines forming circles,

the enclosed spaces dotted with brownish scales; several other irregular black marks. Expanse, 32 mm.

♀ Pale ash color, secondaries darker. Primaries with diffuse dark brown strigæ. Outer border (one-fifth of wing) dull ocherous, defined inwardly and on the fringe by dark brown, and also in a spot at middle of outer margin. Expanse, 36 mm.

Habitat, Florida.

Genus **Hypopta** *Hübner.*

1822—*Hypopta* HUEBNER, Verz. bek. Schmett., p. 195.

Synopsis of species.

Wings nearly uniformly white; pectinations of antennæ brown . **manfredi.**
Wings more or less mottled or irrorate with dark shades; pectinations of antennæ blackish.
With blackish marks at end of median vein.
Terminal half of wing thickly covered with intervenular purplish confluent spots . . . . . **theodori.**
Dark marking extending only from origin of vein 2 to cross vein or further; fringe of secondaries almost entirely white . . . . . **bertholdi.**
Dark marks confined to origin of veins 3—4; fringe of secondaries distintly black spotted . . . . . **ethela.**
Without any blackish discal marks.
Wings largely marbled with pale brown, the white ground reduced to a series of confluent spots . . . **henrici.**
A brown spot on middle of interior margin only . . **cornelia.**
Without any brown markings on fore wings, white, irrorate with black scales . . . . . **edwardi.**
Wings gray, reticulated with black lines . . . . . **nanus.**

H. manfredi *Neumœgen.*

1884—*Hypopta manfredi* NEUMŒGEN, Papilio, Vol. III, Vol. 139.

White, obscurely irrorate with brown scales on primaries, becoming defined on the cell into a rather distinct shade. Antennæ brown. Expanse, 30 mm.

Habitat, Arizona.

H. theodori *Dyar.*

1893—*Hypopta theodori* DYAR, Can. Ent., Vol. XXV, p. 220.

White, terminal half of both wings nearly covered by confluent intervenular purplish spots, which become smaller towards margin and on primaries form a continuous blackish shade beyond cell from origin of vein 2 to sub-costal vein. Expanse, 30 mm.

Habitat, New Mexico.

H. bertholdi *Grote.*

1880—*Hypopta bertholdi* Grote, Bull. Brook. Ent. Soc., Vol. III, p. 45.

Pale gray, veins of primaries black. Costa and central area of primaries white, cut by the black veins, the white spreading diffusely into the gray; at veins 2—5 at base, the black spreads between the veins. Expanse, 35 mm.

Habitat, Colorado.

H. ethela *Neumœgen & Dyar.*

1893—*Hypopta ethela* Neumœgen & Dyar, Journ. N. Y. Ent. Soc., Vol. I, p. 32.

Gray; primaries blackish, the white ground heavily irrorate with black scales. A small spot at end of cell without irrorations, and just below it an elongated black spot. Secondaries nearly black centrally. Expanse, 28 mm.

Habitat, Colorado.

H. henrici *Grote.*

1882—*Hypopta henrici* Grote, Papilio, Vol. II, p. 131.

White, with a grayish cast, ♀ darker. Pale yellowish gray rounded confluent spots in a sub-terminal band and one through cell and sub-median interspace, break up the ground into a series of more or less confluent spots, but leave the costa white. Secondaries of ♀ gray, abdomen white. Expanse, 35 mm.

Habitat, Arizona.

H. cornelia *Neumœgen & Dyar.*

1893 *Hypopta cornelia* Neumœgen & Dyar, Journ. N. Y. Ent. Soc., Vol. I, p. 32.

White; a faint brownish tinge on primaries, which becomes marked beyond the cell, forming two obscure, parallel transverse lines; along internal margin a patch of brownish black and pale ocherous scales, broken up obscurely by the ground color. Secondaries light gray. Expanse, 27 mm.

Habitat, Colorado.

H. edwardi *Neumœgen & Dyar.*

1893—*Hypopta edwardi* Neumœgen & Dyar, Journ. N. Y. Ent. Soc., Vol. I, p. 32.

Gray; primaries white, irrorate with black scales, less thickly over the cell. A faint brownish discoloration in the interspaces at base of veins 2—5 at end of cell. Secondaries brownish gray. Expanse, 40 mm.

Habitat, Colorado.

H. nanus *Strecker.**

1876—*Cossus nanus* STRECKER, Proc. Acad. Nat. Sci. Phil., p. 151.

"Expands 1⅛ inch. Has the appearance of a miniature *Cossus ligniperda*, is gray, of lighter and darker shades and reticulated with black lines which are most noticeable across the disk and on the terminal part of wing. Secondaries uniform grayish. Beneath grayish, faintly reticulated.

Habitat, Colorado."

Family HEPIALIDÆ.

Synopsis of genera.

Size large; apices of primaries rectangular, sub-falcate . . **Sthenopis.**
Size smaller; apices rounded . . . . . **Hepialus.**

Genus **Sthenopis** *Packard.*

1864—*Sthenopis* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 390.

Synopsis of species.

General color silvery smoky gray.
Two silvery spots near base of discal cell.
Color smoky gray . . . . . **argenteomaculatus.**
Ground color silvery purple . . . . *var.* **purpurascens.**
One silvery spot near base and another sub-apical . . . *var.* **los.**
No silver dots on primaries . . . . . *var.* **perdita.**
General color pale salmon . . . . . **quadriguttatus.**
General color white . . . . . **thule.**
General color dull lilac, gold tinted . . . . . **auratus.**

S. argenteomaculatus *Harris.*

1841—*Hepialus argenteomaculatus* HARRIS, Rep. Ins. Mass., p. 295.
1864—*Sthenopis argentatus* PACKARD, Proc. Ent. Soc. Phil , Vol. III, p. 292.
1885—*Cossus alni* KELLICOTT, Ent. Amer., Vol. I, p. 175.

var. **purpuracens** *Packard.*

1863 —*Gorgopis purpurascens* PACKARD, Bost. Journ. Nat. Hist., Vol. VII, p. 598.

var. **los** *Strecker.*

1893—*Hepialus los* STRECKER, Proc. Acad. Nat. Sci. Phil., p. 282.

var. **perdita** *Dyar.*

1893—*Sthenopis argenteomaculatus* var. *perdita* DYAR, Can. Ent., Vol. XXV, p. 327.

Sable brown with a silvery tint, with several large dark brown marks bordered by a bright shade; outer margin dark, broadly so at internal angle, with or without two silvery spots near the base

* We are indebted to Dr. Strecker for a sketch of the venation of this species.

of the wing. Secondaries uniformly sub-translucent, brown, with an apical slightly silvery mark. Expanse, 65—105 mm.

Habitat, Northern Atlantic States northward.

S. quadriguttatus *Grote.*

1864—*Gorgopis quadriguttatus* Grote. Proc. Ent. Soc. Phil., Vol. III, p, 73.
1893—*Sthenopis argenteomaculatus* var. *semiauratus* Neumœgen & Dyar, Can. Ent., Vol. XXV, p. 124; 1893—Grote, Can. Ent., Vol. XXV, p. 186; 1893—Strecker, Proc. Acad. Nat. Sci. Phil., p. 283.

Of a pale salmon color with olivaceous golden brown bands arranged as in *argenteomaculatus*, consisting of oblique basal, abbreviated discal and sub-apical; two costal spots and terminal band, the latter wide at internal angle and inclosing a paler shade. Near base of cell on primaries two silvery spots, ringed with black.

Habitat, Mountains of New England northward.

S. thule *Strecker.*

1875—*Hepialus thule* Strecker, Lep. Roph. & Het., pt. 105, pl. 12, f. 6.

Yellowish white, the costal third of wing as far as end of cell, densely mottled with cinnamon brown. A few irregular small brown spots scattered over the wing. Near base of cell two white spots, and at upper angle of cell two others, all black ringed. Secondaries white, with a few brown marks on the costal edge. Expanse, 65 mm.

Habitat, Canada, Wisconsin.

S. auratus *Grote.*

1878—*Hepialus auratus* Grote, Can. Ent., Vol. X, p. 18.

Yellowish brown with a brassy lustre and whitish ill defined marks appearing most strongly on two parallel bands (t. p. and s. t.), the latter marked with two or three silvery white triangular spots sub-apically. Expanse, 48 mm.

Habitat, New York, New Hampshire.

Genus **Hepialus** *Fabricius.*

1775—*Hepialus* Fabricius, Syst. Ent., p. 589.
1852—*Epialus* Lederer, Verh. Zool. Bot. Ges. Wien, Vol. II, p. 73.

Synopsis of species.

An oblique band from near internal angle to base of wing.
  Silvery white or whitish markings on wing.
    Wing opaque, markings silvery . . . . . **ganna.**
    Wings sub-translucent, markings faintly silvery or white.

Size 30 mm. or less . . . . . **mustelinus.**
Size more than 30 mm. . . . . **gracilis.**
No white marks, bands smoky . . . . . **roseicaput.**
No such oblique band.
Transverse rows of whitish spots, dusky bordered . . . **lembertii.**
Transverse bands partly silvery white.
Silver spots well fused, especially in outer band . . **sequoiolus.**
Silver spots smaller, nearly separate or reduced . . **behrensii.**
No silvery marks on wings.
Size rather large (35—55 mm.) . . . . . **montanus.**
Size small (less than 30 mm.)
No red marks; color ocherous or partly stone color . **hectoides.**
With traces of transverse bands marked with bright red *var.* **lenzi.**

H. ganna *Hübner.*

1804?—*Bombyx ganna* HUEBNER, Eur. Schmett. Bomb., f. 215.
1884—*Hepialus confusus* HY. EDWARDS, Papilio, Vol. IV, p. 122.
1886—*Hepialus mc-glashani* HY. EDWARDS. Ent. Amer., Vol. II, p. 14.

var. **hyperboreus** *Möschler.*

1862—*Epialus hyperboreus* MOESCHLER, Wien. Ent. Mon., Vol. VI, p. 129.
1864—*Hepialus pulcher* GROTE, Proc. Ent. Soc. Phil , Vol. III, p. 522.

var. **matthewi** *Hy. Edwards.*

1874—*Hepialus matthewi* HY. EDWARDS, Proc. Cal. Acad., Vol. V. p. 265.

Ground color yellowish brown, dark brown (*hyperboreus*) or pale yellowish brown with orange tints (*matthewi*), with irregular silvery bands on primaries. These consist of a band which starts at base, runs to costal third, then to internal margin before internal angle and thence to apex; it is angular and furnished with irregular projections, sometimes broken into spots or partly absent. A discal spot, one on basal third of internal margin and some marks on middle of outer margin, all of which may be more or less reduced or absent. Secondaries blackish, paler along costa and outer margin. Expanse, 25 – 35 mm.

Habitat, Arctic and mountainous regions of Europe and North America.

H. mustelinus *Packard.*

1864—*Hepialus mustelinus* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 393.
1864—*Hepialus labradoriensis* PACKARD, Proc. Ent. Soc. Phil., Vol. III, p. 394.

Brown; primaries faintly mottled with paler brown with a whitish somewhat irregularly outlined band along internal margin and reaching from before internal angle to apex; above it, along the margin, a black shade. Expanse, 27 mm.

Habitat, Labrador.

H. gracilis *Grote.*

1864—*Hepialus gracilis* Grote, Proc. Ent. Soc. Phil., Vol. III, p. 522.
1884—*Hepialus furcatus* Grote, Can. Ent., Vol. XV, p. 30.

Sub-translucent obscure gray. A pale white band from apex to internal margin, running thence to base, rather broad but indented. The rest of the wing obscurely clouded with black and brownish scales, without distinct marks. Outer margin white, fringe black spotted. Expanse, 33—40 mm.

Larger than *mustelinus* and paler in the specimens before us, but with the same markings; probably not specifically distinct.

Habitat, Northern Atlantic States to Canada.

H. roseicaput *Neumœgen & Dyar.*

1893—*Hepialus roseicaput* Neumœgen & Dyar, Can. Ent., Vol. XXV, p. 125.

Primaries salmon brown, with obscure smoky black bands arranged after the pattern of *gunna*. Secondaries blackish. Expanse, 33 mm.

Habitat, British Columbia.

H. lembertii *Dyar.*

1894—*Hepialus lembertii* Dyar, Ent. News, Vol. V, p. 25.

Ocherous with the bands broken up into a series of dusky bordered, sub-hyaline, whitish spots, varying considerably in size and distinctness. Certain of them may be absent or confluent with others. Secondaries blackish. Expanse, 30—35 mm.

Habitat, High Sierras of California.

H. sequoiolus *Behrens.*

1876—*Hepialus sequoiolus* Behrens, Can. Ent., Vol. VIII, p. 174.
1876—*Hepialus mendocinolus* Behrens, Can. Ent., Vol. VIII, p. 174.

Dark brown with a salmon tint along costa. Two oblique silvery bands composed of spots from internal margin to subcostal vein, bordered outwardly by a narrow red line. A subterminal pale band. Secondaries blackish. Expanse, 32—40 mm.

Habitat, California and Pacific Northwest.

H. behrensii *Stretch.*

1872—*Sthenopis behrensii* Stretch, Zyg. & Bomb. N. A., p. 105.
1874—*Epialus tacomæ* Hy. Edwards, Proc. Cal. Acad. Sci., Vol. V, p. 365.

Salmon brown, wings nearly immaculate. Three paler transverse parallel bands can be made out, the t. a. and t. p. marked

with silver on lower third. Outer band (3rd) often absent. Expanse, 55 mm. Probably not different from the preceding.

Habitat, California and Pacific Northwest.

H. montanus *Stretch.*

1872—*Hepialus montanus* STRETCH, Zyg. & Bomb. N. A., p. 105.
1875—*Hepialus desolatus* STRECKER, Lep. Roph. & Het., p. 107.
1876—*Hepialus baroni* BEHRENS, Can. Ent., Vol. VIII, p. 175.
1881—*Hepialus anceps* HY. EDWARDS, Papilio, Vol. I, p. 36.
1881—*Hepialus rectus* HY. EDWARDS, Papilio, Vol. I, p. 36.

Dark brown or yellowish brown. Three maculate paler bands (t. a., t. p. and s. t.) defined by darker edges. A terminal series of similar spots. Markings obscure but evident. Secondaries concolorous or darker. Expanse, 55 mm. or less.

Habitat, California and the Pacific Northwest.

H. hectoides *Boisduval.*

1868—*Hepialus hectoides* BOISDUVAL, Ann. Soc. Ent. Fr., Vol. XII, p. 85.
1875—*Hepialus modestus* HY. EDWARDS, Proc. Cal. Acad. Sci, Vol. V, p. 112.
1881—*Hepialus inutilis* HY. EDWARDS, Papilio, Vol. I, p. 36.

var. **lenzi** *Behrens.*

1876—*Hepialus lenzi* BEHRENS, Can. Ent., Vol. VIII, p. 175.
1878—*Hepialus sangaris* STRECKER, Lep. Roph. & Het., Vol. I, p. 136.

Stone color with two oblique parallel pale yellowish bands narrowly marked with vermillion. This color may be lacking, or the bands, or all the stone colored shade, leaving the wings pale yellowish. Expanse, 16—20 mm.

Habitat, California, Arizona.

We have not been able to recognize the following:

Hepialus californicus *Boisduval.*

1868—*Hepialus californicus* BOISDUVAL, Ann. Ent. Soc. Belg., Vol. XII, p. 85.

It has the appearance and form of *carnus* of the Alps. Fore wings obscure gray, showing in a certain light towards the extremity some whitish parallel rays enclosing little rounded patches of a more obscure color. Hind wings blackish gray.

ADDITIONS AND CORRECTIONS.

Family **Euchromiidæ.** For *Lycomorpha fulgens* Hy. Edw. read *L. æqualis* Walk. and remove the name from the list of North American species. Add *L. fulgens* as a synonym of *L. grotei.*

Family **Lithosiidæ**, genus *Pagara.* Add *P. eudora* Dyar, 1894, Ent. News, Vol.V, p. 198. Like *P. simplex* but white instead of gray.

Habitat, Southern States.

Genus *Clemensia.* Add *C. lactea* Stretch, 1885 *Cisthene lactea* Stretch, Ent. Amer., Vol. I, p 103. White with about six small black spots. *Habitat*, California.

Omit the sub-family Eudulinæ (= Geometrids).

Family **Arctiidæ.** Add to *Seirarctia echo* as a synonym *Spilosoma niobe* Strecker, Proc. Acad. Nat. Sci., 1884, p. 284. Add to *Estigmene acræa* as a synonym *Leucarctia acræa* var. *klagesii* Ehrmann, Can. Ent., Vol. XXVI, p. 292 (1894).

Genus *Pareuchætes.* For *P. cadaverosa* Grt. read *P. insulata* Walker, 1855, Cat. Brit. Mus., pt. III, p. 734.—Beutenmüller, 1894, Bull. Am. Mus. N. H., Vol. VI, p. 368, and place *cadaverosa* as a synonym.

Page 153 erase the genus *Coscinia* (not American).

For genus *Haploa* read:

Vein 5 of secondaries arising close to 4 . . . . . **Haploa.**
Vein 5 of secondaries from near middle of cell . . . . **Doa.**

Doa gen n.

Differs from *Coscinia* in the broader trigonate wings, the presence of vein 5 on secondaries and the greater coalescence of 8 with sub-costal, nearly reaching tip of cell. On fore wings veins 7– 8 and 9—10 arise from a pair of separate stalks from the cell, while in *Coscinia* the stalks are fused into one at basal half, so that 7—10 are on a single stalk. Ocelli present, front smooth, head prominent, tongue moderate. Type *Doa dora* Neum. & Dyar.

Synopsis of species.

Fore wings gray, without borders . . . . . **dora.**
Fore wings white, edged with a narrow black line on costa and outer margin **ampla.**

D. dora sp. n.

♀ Fore wings carneous gray crossed before the middle and again beyond the cell by a broad, diffuse, dark gray band; terminally the wing is scarcely darker than elsewhere. Six black dots arranged exactly as in *D. ampla* Grt. Costal edge and fringe concolorous. Secondaries, underside and abdomen dark blackish gray, uniform, immaculate, except for a small discal dot on both wings below. Thorax apparently concolorous with fore wings, but injured. Antennæ black. Expanse, 38 mm.

Habitat, Guadalajara, Mexico.

Page 155 for *Coscinia ampla* Grote, read *Doa ampla* Grote.

Genus *Kodiosoma*. Reduce all the four species to one, being varities of *K. fulva*.

Family **Agaristidæ** –The only character to separate this family from the Noctuidæ is the swollen antennæ. Therefore we would suggest that all the genera here enumerated, except *Alypia*, be transferred to the Noctuidæ.

Place Genus *Seudyra* Stretch as a synonym of *Zalissa* Walker, 1865 Cat. Brit. Mus., pt XXXIII, p. 936; 1894 Hampson, Moths of India, Vol. II, p. 155.

Genus *Alypiodes* (not Alypioides) add *A. bimaculata* H.-S. Like *A. crescens* but without a yellow spot on secondaries above. *Habitat*, New Mexico.

Family **Lagoidæ**—Add to genus *Carama* the following:—*C. pura* Butler (1878, Trans. Ent. Soc. Lond., p. 64). Like *C. cretata* but the whole head is pale lemon yellow except the front which is blackish. *Habitat*, Southern States, (♂ Washington, D. C.)

Family **Pyromorphidæ**—Substitute the following synopsis of genera for the one given on page 63:

Veins 8—9 stalked, or all veins free (from cell) when 8 is absent.
  Primaries elongate, narrow, apex acute; vein 8 absent . **Acoloithus.**
  Primaries broader, apex rounded; vein 8 usually present.
    Costa of primaries convex . . . . . **Pyromorpha.**
    Costa straight . . . . . **Triprocris.**
Veins 8—10 stalked, or 9—10 stalked when 8 is absent . . **Harrisina.**

Genus *Triprocris*. Add *T. lustrans* Beutenmüller. 1894, Bull. Am. Mus. Nat. Hist., Vol. VI, p. 367. Black, with metallic blue lustre; expanse, 31 mm. *Habitat*, Colorado.

Family **Limacodidæ**—Erase *Limacodes viridus* Reak. as a synonym of *Euclea indetermina* Bd. and place it as a synonym of *Parasa chloris* H.-S.

Family **Notodontidæ**—Insert *Heterocampa chapmani* Grote. It is unknown to us, but presumably a good species.

Family **Saturniidæ**—Change the synopsis of sub-families to read:

Antennæ doubly bipectinated in the ♀ . . . . **Attacinæ.**
Antennæ simply bipectinated or simple in the ♀ . . **Hemileucinæ.**

Erase "sub-family Lemoniinæ" on p. 129 and insert sub-family Hemileucinæ before genus *Automeris* on page 127.

LIST OF UNRECOGNIZED NAMES.

Lycomorpha desertus Hy. Edw., Papilio, Vol. I, p. 81 (1881). Type lost; family and generic location uncertain.

Edema plagiata Walker, Cat Brit. Mus., pt. XXXII, p. 427 (1865) Type lost, description unrecognizable.

Rhagonis bicolor Walker, Trans. Ent. Soc. Lond , (3), Vol. I, p. 270 (1862). Type lost, description unrecognizable.

APPENDIX.

We have refrained from changing any of the family names during the publication of the foregoing revision; but certain changes seem desirable. It would appear proper to alter the name of a family when the genus from which it was taken becomes a synonym.* On this account, principally, the following changes are suggested: —

(1) *Euchromiidæ.* We took this name from Kirby's Catalogue (Euchromiinæ, p 117); but as Syntomidæ has been used previously and is adopted by Hampson, it would seem preferable to use it. However, according to Kirby, *Syntomis* is a synonym of *Zygæna*, and hence the family should be called Zygænidæ. We have felt unwilling to make this change, as the name has been commonly associated with such different insects (Anthroceridæ, type *A. filipendulæ* L)

(2) *Liparidæ.* Kirby and Hampson agree in suppressing the genus Liparis. The name will be changed to Lymantriidæ, following Hampson (Moths of India, Vol. I, p. 432).

(3) *Drepanulidæ.* Mr. Grote has suggested to us that this should be Platypterygidæ. However, as the name stands, it is uniform with Kirby and Hampson. We would make it Drepanidæ.

(4) *Limacodidæ.* Both the genera *Limacodes* and *Cochlidion* have become synonyms. In correspondence with Prof. Comstock we have concluded to call the family Eucleidæ.

(5) *Lagoidæ.* This should be changed to Megalopygidæ not only because *Lagoa* has become a synonym, but also in recognition of the work of Cárlos Berg (Ann. Soc. Cient. Argentina, Vols. XIII—XIV).

* See rules of nomenclature adopted by the international zoological congress held in Moscow, 1892.

(6) *Saturniidæ.* It may be advantageous to recognize the two sub-families as of family rank, i. e. Saturniidæ (Attacinæ) and Hemileucidæ.

(7) *Ceratocampidæ* should be changed to Citheroniidæ as *Ceratocampa* is a synonym.

Finally we would arrange the families here treated of in systematic order, following the classification into sub-orders founded by Prof. Comstock and the super-families of the Frenatæ suggested by Mr. Dyar.

Type **Arthropoda,** Class **Hexapoda=Insecta,** Order **Lepidoptera.**

Sub-order **Jugatæ.**

Family Hepialidæ.

Sub-order **Frenatæ.**

Super-family **Cossina** (Microlepidoptera).

Families Cossidæ.
Psychidæ.
Lacosomidæ.

Super-family **Anthrocerina.**

Families Pyromorphidæ.
Megalopygidæ.
Eucleidæ.

Super-family **Saturnina** (Bombycina).

Families Citheroniidæ.
Hemileucidæ.
Saturniidæ.
Bombycidæ.

Super-family **Noctuina.**

Families Notodontidæ.
Dioptidæ.
Drepanidæ.
Agaristidæ.
Pericopidæ.
Lithosiidæ.
Arctiidæ.
Euchromiidæ (Zygænidæ).
Lymantriidæ.

Super-family **Lasiocampina** (?).

Family Lasiocampidæ.

A PRELIMINARY REVISION OF THE LEPIDOPTEROUS FAMILY NOTODONTIDÆ.

BY B. NEUMOEGEN AND HARRISON G. DYAR, S. B., A. M.

The following revision is continuous with that being published by us in the journal of the New York Entomological Society, including the series of families formerly classed as "Bombyces." Mr. Dyar has prepared the present paper from the material in Mr. Neumoegen's collection, and has recently gone over a large part of the species with Dr. A. S. Packard, to whom our thanks are due.* The manuscript has thus become complete, and we have concluded to present this family separately, thus saving space in the New York journal.

The Notodontidæ belong to the group of specialized frenulum conserves in which the cubitus (median vein) is apparently three branched. Their relations may, perhaps, be best exhibited by a synopsis of groups of the Lepidoptera, which is drawn up on the lines suggested by Prof. J. H. Comstock.†

We have used two systems of nomenclature of the veins of the wings, and present the following table, showing the corresponding name for each vein:

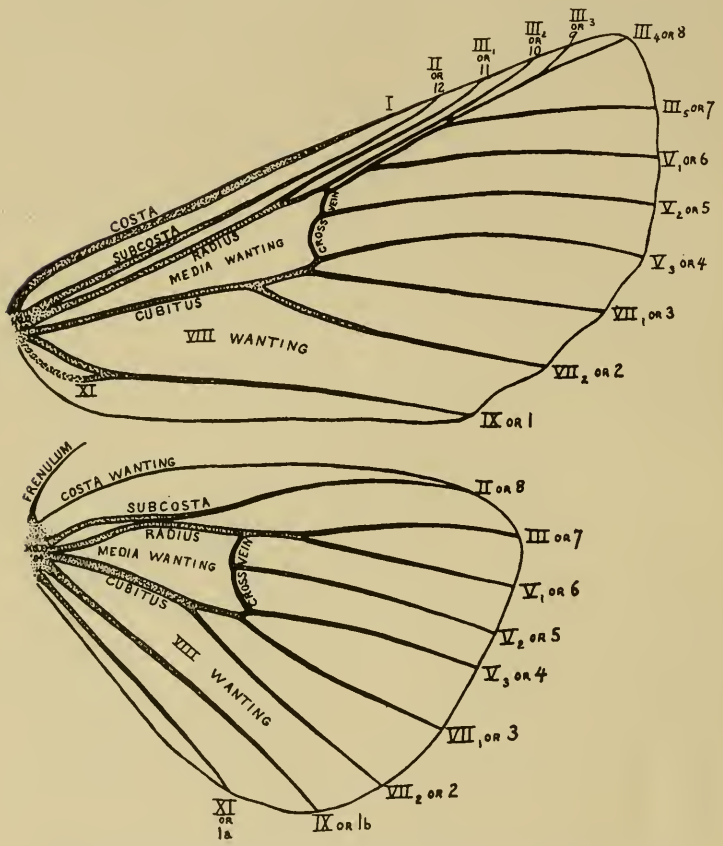
Herrich-Schaeffer System.		Redtenbacher-Comstock System.	
Fore wings.	*Hind wings.*	*Fore wings.*	*Hind wings.*
1, vein 1*a*	1, vein 1*a*	1. vein ix	1, vein xi
2, vein 1*b*	2, vein 2*b*	2, vein viii	2, vein ix
3, median vein	3, vein 1*c*	3, cubitus or vii	3, vein viii
4, vein 2	4, median vein	4, vein vii_2	4, cubitus or vii
5, vein 3	5, vein 2	5, vein vii_1	5, vein vii_2
6, discoidal vein	6, vein 3	6, media or v	6, vein vii_1
7, discal cross-vein	7, discoidal vein	7, cross-vein	7, media or v
8, vein 4	8, discal cross-vein	8, vein v_3	8, cross-vein
9, vein 5	9, vein 4	9, vein v_2	9, vein v_3
10, vein 6	10, vein 5	10, vein vi_1	10, vein v_2
11, subcostal vein	11, vein 6	11, radius or iii	11, vein v_1
12, vein 7	12, subcostal vein, or vein 7	12, vein iii_5	12, radius or iii
13, vein 8	13, vein 8	13, vein iii_4	13, subcosta or ii
14, vein 9		14, vein iii_3	
15, vein 10		15, vein iii_2	
16, vein 11		16, vein iii_1	
17, vein 12		17, subcosta or ii	
18, costal edge.		18, costa or i	

* We would refer to Dr. Packard's monograph for a fuller treatment of the Notodontidæ than is possible in the limits of this paper. We deem ourselves fortunate in having been able to consult with Dr. Packard concerning the synonymy of several of the species, which is the better established by a consensus of opinion. In a few instances, notably in the rank to be assigned to certain local forms, we have felt obliged to differ from Dr. Packard.

† Wilder Quarter Century Book, pp. 37–113 (1893).

Synopsis of the Suborders of the Lepidoptera.

Wings united by a modification of the base of primaries; venation essentially similar in the two wings..... .....JUGATÆ.
Wings united by a modification of base of secondaries; venation dissimilar in the two wings..... .....FRENATÆ.



Venation of *Heterocampa lunata* Hy. Edw., illustrating nomenclature of veins.

This division is sharp, not complicated by any intergrading forms. It should be followed directly by a synopsis of families in each suborder, for we have not found it possible to define a series of superfamilies with satisfactory exactness. However, several divisions of the Frenatæ may be recognized, though they are not sharply separated.

Suborder **FRENATÆ.**

Frenulum usually distinct, single in ♂, usually divided and shorter in ♀ : rarely abortive.....*Frenulum conservers.*

Frenulum absent, or very rudimentary; replaced by an expanded area at base of secondaries, often containing supplementary humeral veins.
Frenulum losers.

The frenulum conservers are well distinguished in general; but several genera occur in which the frenulum is much reduced or even absent, while in some families included in the frenulum losers there is a rudimentary frenulum. These divisions of the Frenatæ do not represent separate lines of descent, as is the case in the division into suborders since the Lasiocampidæ are separated from their allies in the Arctiid series.

The *Frenulum conservers.*

Primaries with two, or secondaries with three anal veins, usually complete; median often well preserved..... ....*Generalized frenulum conservers.*

Primaries with one, and secondaries with not more than two anal veins, except rarely traces of a third.....*Specialized frenulum conservers.*

These divisions are fairly well marked. The Castniidæ, Cossidæ, Eucleidæ (= Limacodidæ), Pyromorphidæ, Megalopygidæ (= Lagoidæ), Psychidæ and many of the microlepidoptera fulfill the characters of the first division; but this does not appear to be the case with all the microlepidoptera, nor with the Sesiidæ. On the other hand, our species of *Phryganidia* (Dioptidæ) shows a portion of a third anal vein on the hind wings.

The families intended to be included by the term "specialized frenulum conservers" may be separated by the following table:

Secondaries without distinct intercostal cell.
Cubitus of primaries apparently 4-branched.
The radius and subcosta of secondaries united for about one-third the length of cell or more.
These veins completely coalesced to tip.....EUCHROMIIDÆ.
Not completely coalesced (apparently so in a few instances).
ARCTIIDÆ.
LITHOSIIDÆ.
The radius and subcosta free toward base, except in a few instances.
Vein v_1 arising close to, or in conjunction with radius on secondaries.
Cubitus of secondaries apparently 4-branched; ♂ antennæ pectinate.
PERICOPIDÆ.
LIPARIDÆ.
Cubitus of secondaries 3-branched, or 4-branched; antennæ often simple; ocelli often present.....
NOCTUIDÆ.
AGARISTIDÆ.

Vein v^1 of secondaries arising apparently from discal cross-vein; subcosta running close to radius beyond cell, or even joining it. DREPANIDÆ.

Branches of radius of primaries all free.....THYRIDÆ.

Cubitus of primaries apparently 3-branched.

Veins v_3 and vii_1 arising independently.

Body slender, wings fragile, finely scaled..... { GEOMETRIDÆ. / BREPHIDÆ.

Body larger and robust.

Vein v_1 of secondaries joined to radius before apex of cell. CYMATOPHORIDÆ.

Vein v_1 joined at or beyond end of cell.....NOTODONTIDÆ.

Veins v_3 and vii_1 coalesced at base.....DIOPTIDÆ.

Secondaries with a distinct inter-costal cell; wings usually elongate. SPHINGIDÆ.

Family NOTODONTIDÆ.

Synopsis of Subfamilies and Genera.

Outer margin of primaries excavate below apex; accessory cell on a long stalk. APATELODINÆ.

Outer margin entire, or at most moderately excavate between the terminations of the nervules.

Antennæ of ♂ bipectinated to the tip or simple.....NOTODONTINÆ.

Antennæ of ♂ with distinct pectinations.

Primaries with an accessory cell.

A tufted tooth on internal margin of primaries..... ...**Notodonta.**

Internal margin entire.

Pectinations of antennæ long.

Thorax with large central tuft.....**Nadata.**

Thorax untufted.....**Hyparpax.**

Pectinations moderate or short.

Costa of primaries straight, apex rectangular.....**Symmerista.**

Costa convex, apex rounded.....**Nerice.**

Primaries without accessory cell (rarely a small one in one *Cerura*).

Internal margin entire.

Vein 5 (v_2) of secondaries distinct.....**Cerura.**

Vein 5 (v_2) of secondaries weak or absent.

Tip of abdomen with a brush-like tuft.....**Melalopha.**

Tip of abdomen simple..... { **Gluphisia.** / **Enmelia.**

A tufted tooth on internal margin of primaries.....**Pheosia.**

Antennæ of ♂ simple, without distinct pectinations.

A tufted tooth on internal margin of primaries.

Accessory cell absent..... **Lophodonta.**

Accessory cell present.....**Lophopteryx.**

Internal margin entire.

Accessory cell present.....**Datana.**

Accessory cell absent.....**Nystalea.**

Antennæ of ♂ pectinated for basal two-thirds or more, the tips bare.
HETEROCAMPINÆ.
A slight tooth on internal margin of primaries.....**Ianassa.**
Internal margin entire.
Accessory cell present.
Antennæ of ♀ simple.
Antennæ of ♂ pectinated for basal three-fourths or less.
A vertical tuft on the head; black spots above internal angle of primaries.....**Dasylophia.**
Head without a distinct erect tuft.
Terminal abdominal hairs gathered into a more or less conspicuously bifid tuft.....**Schizura.**
Anal tuft not normally bifid.
Accessory cell moderately long.....**Euhyparpax.**
Accessory cell reaching half way to apex of wing.
Wings elongate, more than twice as long as broad.
Heterocampa.
Wings shorter, twice as long as broad, or less.....**Cecrita.**
Antennæ of ♂ pectinated nearly to tip.....**Misogada.**
Antennæ of ♀ pectinated.....**Litodonta.**
Accessory cell absent; veins 6–10 stalked (v_1 joint to radius).
Head moderately prominent.....**Macrurocampa.**
Head sunken in the thorax.....**Ellida.**

Subfamily APATELODINÆ.

Genus **Apatelodes** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 353.
1891.—Kirby, Cat. Lep. Het. vol. i, p. 851.

Synopsis of Species.

Outer margin entire below vein 5 (v_2).....**torrefacta.**
Outer margin deeply excavate between the terminations of veins...**angelica.**

A. torrefacta Abbot and Smith.
1797.—Abbot and Smith, Lep. Ins. Ga. vol. ii, pl. 76. *Phalæna.*
var. **floridana** Hy. Edwards.
1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 13.

Ash-gray, clouded with smoky-brown on the fore wings, with transverse anterior and transverse posterior, narrow, waved, deep brown lines, and between them two others of smoky-brown, often faint. Within the transverse anterior line on internal margin is a large, deep brown patch, partially divided by ashen scales on vein 1 (ix). Between veins 6 and 7 (iii_5 and v_1), near the margin, is a triangular or quadrate, white, subhyaline spot. Secondaries dull red, with an outer whitish line, marked on the internal margin by two deep brown dashes. Posterior edge of thorax and tip of abdomen deep brown. Expanse, ♂ 40 mm.; ♀ 50 mm.

Hab.—Atlantic States.

The varietal form *floridana* is more reddish with markings obscured.

A. angelica Grote.

1864.—Grote, Proc. Ent. Soc. Phil. vol. iii, p. 322. *Parathyris.*

hyalinopuncta Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 354. *Apatelodes.*

var. **indistincta** Hy. Edwards.

1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 13.

Ash-gray, transverse anterior and transverse posterior lines consisting of rows of brown, venular points, the two intermediate lines deep clay-brown, broad, diffused. Between veins 4–5 (v_3–v_2) and 5–6 (v_2–v_1) a quadrate, white, hyaline spot, the lower one smaller. Secondaries pale brownish, with an inner brown, and outer pale obscure line. Thorax gray, with central brown crest. Abdomen thickly dotted with reddish brown dorsally. Expanse, ♂ 42 mm.; ♀ 47 mm.

Hab.—Atlantic States.

The variety *indistincta* is more reddish than the typical form, and the markings are fainter.

Subfamily NOTODONTINÆ.

Genus **Notodonta** Ochsenheimer.

1810.—Ochsenheimer, Schmett. Eur. vol. iii, p. 45.

Peridea Stephens.

1828.—Stephens, Ill. Brit. Ent., Haust. Pt. ii, p. 32.

Synopsis of Species.

Size large; external margin of primaries excavate between the veins **.elegans.**

Size smaller; external margin entire.

Fore wing shaded with ocher and brown along internal and external margins.

Thorax dark ash-gray..... **.stragula.**

Thorax blackish gray..... **.pacifica.**

Fore wing without ocherous brown marks, but with longitudinal black dashes before internal angle.

Primaries yellowish at base and disc..... **.georgica.**

Primaries uniform stone-gray..... **.tortuosa.**

N. elegans Strecker.

1885.—Strecker, Proc. Acad. Nat. Sci. Phil. 1884, p. 285. *Lophopteryx.*

var. **grisea** Strecker.

1885.—Strecker, Proc. Acad. Nat. Sci. Phil. 1884, p. 286. *Lophopteryx.*

notaria Hy. Edwards.

1885.—Hy. Edwards, Ent. Amer. vol. i, p. 17. *Notodonta.*

Gray, shading into chocolate-brown at base of fore wings. A silvery white mark on vein 1 (anal vein) at base; internal margin between tooth and base ocherous. A series of obscure, subterminal, venular, black dashes, most evident at apex. Secondaries white, with gray patch at internal angle divided by a white line. Thorax gray, abdomen brownish. Expanse, 50 mm.

Hab.—Mountains of New York and New England (Canada), Michigan, Rocky Mountain region.

The var. *grisea* differs in lacking the brown shade at basal part of fore wings.

N. stragula Grote.

1864.—Grote. Proc. Ent. Soc. Phil. vol. iii, p. 93.

race **manitou** Neumoegen and Dyar.

1893.—Neumoegen and Dyar, Jour. N. Y. Ent. Soc. vol. i, p. 35.

Thorax and fore wings slate-gray, replaced by ocherous and brown along internal margin and subterminally. Two deep brown, parallel streaks at base, below median vein and on internal margin respectively. Transverse anterior line waved, ocherous, bordered with brown. A linear discal mark surrounded with pale. Transverse posterior line obsolete, except at internal margin. Subterminal line ocherous, waved. Hind wings white in the male, brownish gray in the female, darker along the outer border. Expanse 40 mm.

Hab.—Atlantic States, westward.

The race *manitou* differs in its much paler colors.

Hab.—Rocky Mountain region.

N. pacifica Behr.

1892.—Behr., Proc. Cal. Acad. Sci. (2) vol. iii, p. 206.

Hab.—Mountains of California and Pacific Northwest.

Closely allied to *stragula*, but darker throughout.

N. georgica Herrich-Schäffer.

1855.—Herrich-Schäffer, Ausser. Schmett. i. f. 384.

Pale gray, with yellowish tinge at base of fore wings, and irrorate with black. T. a. and t. p. lines distinct, black, dentate. A linear black discal dot; tooth black. A series of subterminal, intervenular, black dashes, obsolete centrally; the one between veins 1 and 2 (anal and vii_2) reappears inside t. p. line. Fringe spotted with black. Hind wings white. Expanse 40 mm.

Hab.—Atlantic States, westward.

N. tortuosa Tepper.

1881.—Tepper, Bull. Brook. Ent. Soc. vol. iv. p. 2. *Drynobia.*

Much like *N. georgica.* Primaries and thorax dark stone-gray, slightly tinged with yellowish. T. a. and t. p. lines as in *georgica*, but uniformly black, very faintly whitish bordered; a basal and subapical longitudinal black dash and one near internal angle, discal dot black; white dash at base of wing and on side of thorax. Secondaries whitish, with brownish tinge. Expanse 35 mm.

Hab.—Rocky Mountain region.

Genus **Nadata** Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1062.

‖ *Alastor* Boisduval.

1869.—Boisduval, Ann. Ent. Soc. Belg. vol. xii, p. 87.

Synopsis of Forms.

Color buff, orange-buff to red.

General color buff.

Excavations on external margin filled in with white..... **gibbosa.**

Fringe uniformly ocherous..... var. **doubledayi.**

Color deep orange-red..... race **rubripennis.**

Color straw-yellow.

Wings without black shades..... race **oregonensis.**

A black shade at end of cell..... var. **behrensii.**

N. gibbosa Smith and Abbott.

1797.—Smith and Abbott, Lep. Ins. Ga. vol. ii, pl. 82. *Phalæna.*

var. **doubledayi** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 356. *Nadata.*

race **rubripennis** Neumoegen and Dyar.

1893.—Neumoegen and Dyar, Jour. N. Y. Ent. Soc. vol. i, p. 34.

race **oregonensis** Butler.

1881.—Butler, Ann. Nat. Hist. (5) vol. viii, p. 317.

var. **behrensii** Hy. Edwards.

1885.—Hy. Edwards, Ent. Amer. vol. i, p. 49.

Buff, orange tinted, sometimes irrorate with brown scales. T. a. line curved, t. p. line straight, oblique, narrow, deep brown, faintly edged with whitish. Two rounded, white, superposed, discal spots, preceded by a clear buff space. Secondaries paler toward the costal edge.

Hab.—Atlantic States, westward.

The race *rubripennis* differs in the deep orange-red coloration.

Hab.—Rocky Mountain region.

The race *oregonensis* differs in its paler color.

Hab.—California and the Pacific Northwest.

Genus **Hyparpax** Hübner.

1824.—Hübner, Samml. ex. Schmett. ii.

Sangata Walker.

1860.—Walker, Cat. Brit. Mus. Pt. xx, p. 265.

Synopsis of Species.

Median space clear yellow ..... **aurora.**

Median space irrorate, or covered by reddish scales.

Fore wing pink, with only a line of yellow..... **venus.**

Fore wing pale dull ocherous with lines and irrorations of brownish red. **perophoroides.**

H. aurora Smith and Abbott.

1797.—Smith and Abbott, Lep. Ins. Ga. vol. ii, pl. 87. *Phalæna.*

rosea Walker.

1860.—Walker, Cat. Brit. Mus. Pt. xx, p. 265. *Sangata.*

venusta Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 574. *Dryocampa.*

Pale yellow, shaded with pink. T. a. line bent at right angles on median vein; t. p. straight, oblique, a linear discal mark, all pink. Basal and terminal spaces and costa largely overspread with pink. Secondaries white. Expanse 30 mm.

Hab.—Atlantic States from New York to Florida.

H. venus Neumoegen.

1892.—Neumoegen, Can. Ent. vol. xxiv, p. 226.

Thorax and primaries dark pinkish red, darker than *aurora*. T. p. line straight, narrow, yellow; faint trace of angulated t. a. line. Secondaries white,

tinged with pink outwardly and on fringe. Abdomen pale clay-yellow, with the tip pink. Expanse 35 mm.

Hab.—Colorado.

H. perophoroides Strecker.

1877.—Strecker, Proc. Acad. Nat. Sci. Phil. 1876, p. 152. *Cosmia.*

aurostriata Graef.

1888.—Graef, Ent. Amer. vol. iv, p. 58. *Hyparpax.*

var. **tyria** Slosson.

1894.—Slosson, Ent. News vol. v, p. 198.

Very pale ocherous, all the margins of fore wing deep brownish red. Wing evenly irrorate; lines as in *aurora*, narrow, even, the discal streak sometimes united with the angle of t. a. line. Secondaries white, the outer third tinted dark red. Expanse 30 mm.

Hab.—Florida.

The variety has the wings heavily irrorate.

Genus **Symmerista** Hübner.

1822?—Hübner, Verz. bek. Schmett. p. 248.

Edema Walker.

1855—Walker, Cat. Brit. Mus. Pt. v, p. 1028.

Synopsis of Species.

A white costal edging ..... **albifrons.**
No white edging ..... **packardii.**

S. albifrons Smith and Abbott.

1797.—Smith and Abbott, Lep. Ins. Ga. vol ii, pl. 8. *Phalæna.*

var. **albicosta** Hübner.

1804?—Hübner, Eur. Schmett. Noct. f. 440. *Noctua.*

Ash-gray, shaded with brownish centrally on fore wings. The white costal mark on outer half of wing is expanded into a rounded projection beyond the linear discal dot; lines strigose, confused; a subterminal series of transverse dashes. Secondaries pale gray. The head, collar and central part of thorax, are pale ligneous brown, the whole patch bordered with black. Expanse 30 mm.

The var. *albicosta* differs in having the projection from the costal band tooth-like instead of rounded.

Hab.—Atlantic States, westward.

S. packardii Morrison.

1875.—Morrison, Ann. Lyc. Nat. Hist. N. Y. vol. xi, p. 92. *Edema.*

Brownish cinereous, as in *albifrons*. Costal mark indicated by a pale shade. T. p. line and t. a. line black, geminate, waved. Subterminal row of dashes and discal spot as in *albifrons*. Expanse 31 mm.

Hab.—Texas.

Genus **Nerice** Walker.

1855.—Walker, Cat. Brit. Mus. vol. v, p. 1076.

N. bidentata Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1076.

Thorax silver-gray, with a square, deep brown patch on the anterior part and head. Fore wings silver-gray along internal margin, the costal half brown, shading into deep brown where it joins the gray, and produced downwards in two teeth at the location of the t. a. and t. p. lines. The t. p. line is indicated on costal margin, and there is an oblique brown dash on the outer margin crossing vein 5. Secondaries brownish gray. Expanse 35 mm.

Hab.—Atlantic States.

Genus **Cerura** Schrank.

1802.—Schrank, Fauna Boica ii (2), p. 155.
Andria Hübner.
1810?—Hübner, Tent. p. 1.
Harpyia Ochsenheimer.
1810.—Ochsenheimer, Schmett. Eur. vol. iii, p. 19.
Pania Dalman.
1823.—Dalman, Anal. Ent. p. 92.
Dicranura Boisduval.
1829.—Boisduval, Ind. Meth. p. 54.

Synopsis of Species.

Primaries crossed by about eight angularly undulate black lines.
Secondaries black.....**multiscripta.**
Secondaries white.....**scitiscripta.**
Primaries crossed at basal third by a broad gray band, sometimes absent.
One or more transverse, dentate lines on discal area before the subterminal shade.
Transverse band gray, pulverulent, bordered by black and orange scales.
Fore wings pale cinereous.....**occidentalis.**
Fore wings white.
Transverse band broad.....**scolopendrina.**
Transverse band narrow or broken.....var. **albicoma.**
Band even blackish, without distinct borders.....**modesta.**
A double row of venular dots forming an ellipse, sometimes obsoletely connected.....**borealis.**
A single row of venular dots preceded by a rigid shade line, or discal area immaculate.
Fore wings dark cinereous.....**cinerea.**
Fore wings pale cinereous.....var. **cinereoides.**
Fore wings nearly white.
Transverse gray band distinct.....var. **placida.**
This band very obscure or absent.....var. **nivea.**

C. multiscripta Riley.

1875. Riley, Trans. St. Louis Acad. vol. iii, p. 241.

White; thorax faintly greenish, hind wings blackish. Posterior edge of collar and two transverse rows of dots on thorax black; abdomen banded with blackish above. Wings crossed by eight narrow, dentate, black lines, with a sea-green shade between the lines 2 and 3 and 7 and 8, the latter on costal half. A terminal row of black dots. Expanse, ♂ 25 mm.; ♀ 30 mm.

Hab.—Atlantic States, westward.

C. scitiscripta Walker.

1865.--Walker, Cat. Brit. Mus. Pt. xxxii, p. 408.

candida Lintner.

1878.--Lintner, Rept. Mus. N. Y. xxx, p. 199.

Shining white, marked like *multiscripta*, but without greenish shades. T. a. band absent, or partly present, composed of about four irregular ringlets: discal spot absent, or a ringlet. T. p. band of two or three dentate black lines with black mark at costa and internal angle. Black dots at base of fringe, varying in size. Secondaries white, or shaded with brownish along the veins. Expanse 30--40 mm.

Hab.—Texas, Kansas.

C. occidentalis Lintner.

1878.--Lintner, Rep. Mus. N. Y. xxx, p. 194.

Very pale cinereous; t. a. band edged by darker scales. The basal dots and median line distinct. T. p. line dentate, with its costal band present. Terminal dots large.

Hab.—Atlantic States.

C. scolopendrina Boisduval.

1870.—Boisduval, Ann. Soc. Ent. Belg. vol. xii, p. 86. *Dicranura.*

aquilonaris Lintner.

1878.—Lintner, Rep. N. Y. Mus. xxx, p. 195. *Cerura.*

var. **albicoma** Strecker.

1885.—Strecker, Proc. Acad. Nat. Sci. 1884, p. 284.

White, marked much as *occidentalis*, but the basal dots less distinct. T. a. band defined by black lines and orange scales, varying much in width. Secondaries white with terminal and discal dots, and often traces of a mesial band.

Hab.—Canada, Rocky Mountains, California and the Pacific Northwest.

C. modesta Hudson.

1891.—Hudson, Can. Ent. vol. xxiii, p. 197.

Very pale cinereous, all the dots reduced. T a. band and subapical bands broad, uniform, almost bluish black. All the marks more smooth and smoky than in *occidentalis*, and the fine lines and dots indistinct.

Hab.—Northern Atlantic States.

C. borealis Guérin.

1829.--Guérin, Icon. r. anim. pl. 88, f. 5. *Dicranura.*

White, centre of thorax black, and abdomen black banded. Basal and terminal dots distinct. T. a. band very broad, black, edged with black lines and orange scales. T. p. costal shades runs narrowly across the wing; central dentate line between the bands broken up into distinct dots which form a regular ellipse. Hind wings smoky outwardly with terminal and discal dots.

Hab.—Atlantic States.

C. cinerea Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 407.

var. **cinereoides** Dyar.

1890.—Dyar, Can. Ent. vol. xxii, p. 253.

var. **placida** Dyar.

1892.—Dyar, Psyche vol. vi, p. 291.

var. **nivea** Neumoegen.

1891.—Neumoegen, Can. Ent. vol. xxiii, p. 124. *Heterocampa.*

1893.—Dyar, Ent. News vol. iv, p. 35. *Cerura.*

paradoxa Behr.

1885.—Behr., Bull. Cal. Acad. Sci. vol. i, p. 64 (no desc.).

1892.—Dyar, Psyche vol. vi, p. 291.

meridionalis Dyar.

1892.—Dyar, Psyche vol. vi, p. 291.

1893.—Dyar, Ent. News vol. iv, p. 35.

Dark cinereous to white, the broad, doubly concave t. a. band and subapical t. p. band dark, or in the pale forms pale gray, or even absent or represented by scattered black scales. Both bands edged with orange scales; a median shade line and venular row of dots preceding the t. p. band. A curved row of dots on the veins before t. a. band, and one on median vein (cubitus) at base. Terminal dots variable in size. Expanse 37—45 mm.

Hab.—North America, the dark forms in the Atlantic States, the pale form in California, and the white in the Rocky Mountain region.

Genus **Melalopha** Hübner.

1810.—Hübner, Tent. p. 1.

Ichthyura Hübner.

1822?—Hübner, Verz. bek. Schmett. p. 162.

Clostera Stephens.

1828.—Stephens, Ill. Brit. Ent., Haust vol. ii. p. 12.

Synopsis of Species.

Lines on primaries not anastamosing, free.

Size large, with a distinct, large, brown, apical shade.....**albosigma.**

Size smaller, apical region not distinctly discolored.

Wing uniform in tint.....**alethe.**

Wing shaded with darker blotches.

Pale, the blotches contrasting .....**brucei.**

Dark, more uniformly obscured. .....**multnoma.**

Lines anastamosing, the second joining the third.

Lines uneven, the basal toothed.

Subapical patch pale, yellowish, the s. t. dots preceded by streaks.

strigosa.

Patch yellowish to rusty brown, without streaks.

Size moderate; thoracic mark present.....**apicalis.**

Larger; no thoracic mark.....**inornata.**

Lines nearly even, the basal one dislocated, but not toothed.

Fourth line white on costa .....**inclusa.**

Fourth line not distinctly white. .....**jocosa.**

M. albosigma Fitch.

1859.—Fitch, Rep. Ins. N. Y. v. p. 64. *Clostera.*

var. **specifica** Dyar.

1892.—Dyar, Can. Ent. vol. xxiv, p. 180. *Ichthyura.*

Deep smoky brown, the apical shade deep purplish brown, sharply limited internally by the white sigmoid bend of the fourth line, and becoming velvety black at this point; first and third lines free and nearly parallel, paler than the wing, not well defined. A. s. t. row of diffuse dots. Thoracic patch velvety brown. Expanse 30 mm.

Hab.—Atlantic States northward and westward to Pacific Northwest.

The variety *specifica* is paler throughout.

Hab.—Rocky Mountain region to New Mexico.

M. alethe Neumoegen and Dyar.

1893.—Neumoegen and Dyar, Can. Ent. vol. xxv, p. 122.

Uniformly dark brown, a darker shade on costa before apex. Lines very narrow, yellowish, pulvernlent, the fourth white on costa. S. t. dots distinct on a uniformly colored ground, straight. Expanse 30 mm.

Hab.—California.

M. brucei Hy. Edwards.

1885.—Hy. Edwards, Ent. Amer. vol. i, p. 17. *Ichthyura.*

Pale ash-gray, the lines faintly yellowish. A deep smoky brown shade obtains over the space between the third and fourth lines, and also subapically; fourth line widened and white on costa, the rusty patch outside of it very obscure. S. t. waved row of dots very distinct. Secondaries darker than fore wings and strongly contrasting. Expanse, 22 mm.

Hab.—Northern Atlantic States to the Rocky Mountains.

M. multnoma Dyar.

1892.—Dyar, Can. Ent. vol. xxiv, p. 179. *Ichthyura*

Deep smoky brown with a purplish tint, the lines yellowish. The fourth line very indistinctly widened on costa. Subapical patch rusty-red, distinct, triangular. S. t. dots very obscure. Secondaries concolorous with fore wings.

Hab.—The Pacific Northwest.

M. strigosa Grote.

1882.—Grote, Bull. U. S. Geol. Surv. vol. vi, p. 582. *Ichthyura.*

race **luculenta** Hy. Edwards.

1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 10. *Ichthyura.*

Yellowish gray, shaded and blotched with olive-brown. Lines as in *apicalis*, but even more waved. A yellowish shade at base and subapically, irrorate with rusty-brown; more or less distinct longitudinal lines of smoky-black precede the s. t. dots, the one between veins 4–5 (v_3–v_2) most distinct. Thoracic patch faint, clouded.

Hab.—Northern Atlantic States.

The race *luculenta* is paler, and lacks the brown thoracic mark.

Hab.—Westward.

M. apicalis Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1058. *Ichthyura.*

vau Fitch.

1859.—Fitch, Rep. Ins. N. Y. v, p. 65. *Clostera.*

indentata Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 352. *Ichthyura.*

ornata Grote and Robinson.

1868.—Grote and Robinson, Trans. Amer. Ent. Soc. vol. ii, p. 91. *Ichthyura.*

incarcerata Boisduval.

1868.—Boisduval, Ann. Soc. Ent. Belg. vol. xii, p. 86. *Clostera.*

race **astoriæ** Hy. Edwards.

1887.—Hy. Edwards, Ent. Amer. vol. ii, p. 11. *Ichthyura.*

var. **bifiria** Hy. Edwards.

1887.—Hy. Edwards, Ent. Amer. vol. ii, p. 167. *Ichthyura.*

Sordid white to ash-gray, the lines whitish. The second meets third at about median vein, while the fourth is undulate, widened and white at costa. A s. t. row of black dots preceded by a lead-colored shade centrally. An obscure lead-colored discal dot. The apical portion of the wing as far as vein 3 (vii_1) more or less overspread with ocherous or rusty brown. Secondaries whitish or gray, often with a mesial line. Thoracic mark deep brown. Expanse 25 mm.

Hab.—Atlantic States northward and westward, California and the Pacific Northwest.

The very pale form *astoriæ* is found on the Pacific coast in Oregon, and a form very similar to it occurs in the central region from the Rocky Mountains westward. In the Sierras examples occur of a fine purplish tint constituting the var. *bifiria.*

M. inornata Neumoegen.

1882.—Neumoegen, Papilio vol. ii, p. 134. *Ichthyura.*

1893.—Packard, Ent. News vol. iv, p. 78.

Hab.—Southwestern United States to Mexico.

Closely allied to *M. apicalis*, from which it does not differ in markings. It is, however, larger and paler, more suffused with reddish, and lacks the dark streak on head and thorax.

M. inclusa Hübner.

1825.—Hübner, Zutr. ex. Schmett. vol. iii, p. 36. *Ichthyura.*

americana Harris.

1841.—Harris, Rep. Ins. Mass. p. 314. *Clostera.*

var. **inversa** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 352. *Ichthyura.*

palla French.

1882.—French, Can. Ent. vol. xiv, p. 33. *Ichthyura.*

Pale gray, irrorate with brown. Lines pale, quite straight, the outer white on costa. S. t. dots moderately distinct. Subapical patch ocherous or rusty-brown, the apical and central parts of the wing shaded with olivaceous brown. Secondaries brownish gray, with an irregular mesial line. The variety *inversa* is darker, usually smaller, with the subapical patch more obscured.

Hab.—Atlantic States westward.

M. jocosa Hy. Edwards.

1886.--Hy. Edwards, Ent. Amer. vol. ii, p. 10. *Ichthyura.*

1893.—Packard, Ent. News vol. iv, p. 79.

"Brownish fawn-color," marked as in *inclusa*, but fainter and without white on the fourth line at costa.

Hab.—Florida.

[This may prove to be a varietal form of *inclusa*, as suggested by Dr. Packard.]

Genus **Gluphisia** Boisduval.

1829.—Boisduval, Ind. Meth. p. 56.

Synopsis of Species.

With a yellow (or black) central band on primaries more or less distinct.
Markings distinct.....**septentrionalis.**
Markings confused and irrorate.....**formosa.**
Pale, with no distinct yellowish markings.....**albofascia.**

G. septentrionalis Walker.

1855.--Walker, Cat. Brit. Mus. Pt. v, p. 1038.
clandestina Walker.

1861.—Walker, Can. Nat. and Geol. vol. vi, p. 36. *Dasychira.*
trilineata Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 355. *Gluphisia.*

race **ridenda** Hy. Edwards.

1886.--Hy. Edwards, Ent. Amer. vol. ii, p. 11.

race **quinquelinea** Dyar.

1892.—Dyar, Ent. News vol. iii, p. 158.

Dark gray; basal t. a. and t. p. lines black, waved. Basal and median spaces sordid ocherous in ♂, overspread with metallic black scales in ♀. Secondaries dark gray. Expanse 25 mm.

Hab.—Atlantic States westward.

The race *ridenda* is much paler throughout.

Hab.—Rocky Mountains westward.

The race *quinquelinea* is dark, the ochreous markings obsolete, and middle band evident between t. a. and t. p. lines.

Hab.—Pacific Northwest.

G. formosa Hy. Edwards.

1886.--Hy. Edwards, Ent. Amer. vol. ii, p. 11.

Marked as in *trilineata*. The marks are confused and largely reduced to irrorations, while the color is pale. Base and median space shaded with yellowish. Expanse 25 mm.

Hab.—Central United States to Mexico.

G. albofascia Hy. Edwards.
1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 12.
wrightii Hy. Edwards.
1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 11.
var. **rupta** Hy. Edwards.
1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 12.

Ground color sordid white, the black marks, therefore, more contrasted. Base and median space faintly yellowish ocher; marks variable, basal t. a. and s. t. lines in black, pulverulent, sometimes partly lost. Between these bands are heavy black, transverse, pulverulent shades of variable distinctness. Secondaries white powdered with black. Expanse 30 mm.

Hab.—Utah to Southern California.

Genus **Enmelia** Neumoegen.

1893.—Neumoegen, Can. Ent. vol. xxv, p. 25.
|| *Melia* Neumoegen.
1892.—Neumoegen, Can. Ent. vol. xxiv, p. 225.

Synopsis of Species.

A yellow angular discal dot.....**severa.**
No discal dot.....**lintneri.**

E. severa Hy. Edwards.
1887.—Hy. Edwards, Ent. Amer. vol. ii, p. 167. *Gluphisia.*
var. **danbyi** Neumoegen.
1892.—Neumoegen, Can. Ent. vol. xxiv, p. 225. *Melia.*
race **avimacula** Hudson.
1891.—Hudson, Ent. News vol. ii, p. 165. *Gluphisia.*
var. **slossonii** Packard.
1893.—Dyar, Ent. News vol. iv, p. 35. *Ceruridia.*
1893.—Packard, Psyche vol. vi, p. 502.

Blackish gray, basal line faint, t. a. line black, t. p. line fainter or obsolete. A median shade more or less distinct. S. t. line of confluent spots; an ocherous yellow shade at base, in lower half of median space and sometimes also bordering s. t. line. A yellow point on median vein at base, and an angular yellow discal mark. In some specimens the yellow markings become chestnut-brown. The species is variable. Expanse 35 mm.

Hab.—Mountains of California northward, where it runs into the variety *danbyi*, in which the markings are obscured.

The race *avimacula* lacks the yellow shades at s. t. line, the color is lighter, and the t. a. line less dentate on the veins.

Hab.—Northern New York and New England.

The variety *slossonii* has the yellow shading replaced by black.

Hab.—Northern New York.

E. lintneri Grote.
1877.—Grote, Can. Ent. vol. ix, p. 85. *Dasychira.*
1891.—Dyar, Can. Ent. vol. xxiii, p. 159. *Gluphisia.*

Pale gray, irrorate with black; marked as in *E. severa*, but no basal yellow dot nor discal mark, while the lines are more obscure and the median yellowish shade spreads upward.

Hab.—Northern New York.

Genus **Pheosia** Hübner.

1822?—Hübner, Verz. bek. Schmett. 145.
Leiocampa Stephens.
1828.—Stephens, Ill. Brit. Ent., Haust. vol. ii, p. 24.

Synopsis of Species.

A silvery white line at base of vein 1 (anal vein).
Central part of fore wing white..... **dimidiata.**
Wing centrally smoky-black ..... **portlandia.**
Without silvery-white mark.
Uniform blackish gray, with black discal dot..... **simplaria.**
Primaries brown at base; no discal dot ..... **basitriens.**

P. dimidiata Herrich-Schäffer.
1856.—Herrich-Schäffer, Samml. Auss. Schmett, vol. i, fig. 515. *Drymonia. rimosa* Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 358. *Pheosia. californica* Stretch.
1872.—Stretch, Zyg. and Bomb. N. A. p. 116.

Thorax brownish gray, the patagia and collar outlined with black; abdomen gray, brownish at base. Wings white, shaded with brownish black at apical third of costa and along internal margin, the latter shade becoming brown toward centre of wing. A white line on vein 1 (anal vein) at base, below which is a dull ocherous patch. T. p. line indicated in white on costa and margin. A black patch at anal angle of hind wings. Expanse 55 mm.

Hab.—Atlantic States westward; California.

P. portlandia Hy. Edwards.
1887.—Hy. Edwards, Ent. Amer. vol. ii, p. 168.
descherei Neumoegen.
1892.—Neumoegen, Can. Ent. vol. xxiv, p. 227. *Notodonta.*

Deep smoky-black, the abdomen brown-black and hind wings smoky-white. The markings as in *dimidiata*, but the white parts are entirely obscured, except in an oblique subapical patch. The centre of the wing is brown, and the t. p. line is indicated in pale entirely across the wing.

Hab.—Pacific Northwest.

P. simplaria Graef.
1881.—Graef, Bull. Brook. Ent. Soc. vol. iii, p. 95. *Notodonta.*

Blackish gray. T. a. and t. p. lines black, distinct, waved. An oval, linear, discal dot in paler ring. A subterminal line of black dots obscure. Hind wings pale gray with white mesial band and blackish discal dot. Expanse 45 mm.

Hab.—Mountains of New York, and probably also of New England and northward.

P. basitrieus Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1000. *Notodonta.*

Gray, the veins of fore wing outwardly lined with black. T. a. and t. p. lines converging at internal margin, black, slightly dentate, the t. p. line faint. Basal space including a brown streak which shades into ocherous below. A subterminal row of intervenular, blackish, diffuse spots. Hind wings white, shading into gray outwardly, with dentate mesial line. Expanse 45 mm.

Hab.—Northern Atlantic States.

Genus **Lophodonta** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 357.

Synopsis of Species.

Primaries partly shaded with ferruginous brown.....**ferruginea.**
Primaries with scattered ocher-yellow marks.....**angulosa.**

L. ferruginea Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 357.

Dark blackish brown; basal and outer half of median space shaded with ferruginous brown. T. a. and t. p. lines brown defined by white. A large white costal patch at end of cell. Subterminal line whitish. Secondaries whitish centrally in ♂, gray in ♀, the costal margin darker. A pale, broad, mesial, and narrow subterminal band, defined on costa. Abdomen ligneous brown. Expanse 45 mm.

Hab.—Northern Atlantic States.

L. angulosa Smith and Abbott.

1797.—Smith and Abbott, Lep. Ins. Ga. vol. ii, pl. 83. *Phalæna.*

Dark gray, marked as in *ferruginea*, but without any ferruginous shades. The basal space, t. a. and t. p. lines are marked with brownish ocher, while the costal patch is more obscure than in *ferruginea*.

Hab.—Atlantic States westward.

Genus **Lophopteryx** Stephens.

1828.—Stephens, Ill. Brit. Ent., Haust. vol. ii, p. 26.

L. capucina Linnaeus.

1758.—Linnaeus, Syst. Nat. i, p. 507, N. 55. *Bombyx.*
camelina Linnaeus.
1758.—Linnaeus, Syst. Nat. i, p. 507, N. 56. *Bombyx.*
americana Harvey.
1877.—Harvey, Can. Ent. vol. ix, p. 95. *Lophopteryx.*

Bright brown; nervules interruptedly marked in very dark brown. T. a. line single, forming two approximate, teeth on cell dentate below median vein. T. p. line double, obliterate, with included paler shade which traverses the wing obliquely, marked on costal region; a series of ante-apical pale dots; a purplish brown s. t. shade. Median space diffused, shaded with purplish brown, more apparently so before outer line and inferiorly where the median lines approximate; a terminal brown line, interrupted on the veins, opposite to the extremities of which the exserted fringe is dark brown. Hind wings ochrey, with concolorous fringes becoming brown toward anal angle; a median pale shade,

which intersects at internal margin, a blackish patch. Beneath, yellowish immaculate, the dots on costa of primaries before apices repeated; fringes brown. Body rust-brown. Expanse 36 mm.

Hab.—Northern Atlantic States westward; Europe; Northern Asia. [We are indebted to Dr. Packard for the recognition of *L. americana* Harvey.]

Genus **Datana** Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1060.

Synopsis of Species.

Outer margin of primaries distinctly excavate between the veins.
- Color entirely smoky or blackish brown.....**angusii.**
- Color yellowish brown or paler.
  - Discal spots faint or absent, size medium.
    - Color yellow-brown.....**ministra.**
    - Color testaceous.....**californica.**
  - Discal spots distinct, size large.....**drexelii.**

Outer margin indistinctly excavate, nearly entire in the ♂.
- Color tawny brown or purplish.
  - Tawny brown, discal spots distinct, size large.....**major.**
  - More or less purplish, discal spots indistinct, size medium.
    - Thoracic patch reddish brown.
      - Fore wings dull whitish lilac, more or less covered with cinnamon-brown scales.....**palmii.**
      - Fore wings dark brown with a purplish flush.....**floridana.**
    - Thoracic patch ocherous.....**modesta.**
- Color yellowish buff.
  - Thoracic patch tawny brown.....**perspicua.**
  - Thoracic patch as pale as thorax.....**robusta.**

Outer margin of primaries entire, or a little wavy in the ♀.
- Primaries dark reddish brown, lines and fringe concolorous..**integerrima.**
- Primaries luteous tawny, lines and fringe not concolorous.....**contracta.**

D. angusii Grote and Robinson.

1866.—Grote and Robinson, Proc. Ent. Soc. Phil. vol. vi, p. 9.

1888.—Beutenmüller, Can. Ent. vol. xx, p. 135.

Deep smoky-brown throughout, costal margin of fore wings and outer edge darker; five blackish, narrow lines across the wing, the two outer ones contiguous; an oblique apical streak; discal dots faint or wanting. Head and two-thirds of thorax covered by a square or constricted, deep chocolate-brown patch.

Hab.—Northern Atlantic States westward.

D. ministra Drury.

1773.—Drury, Ill. Ex. Ent. vol. ii, pl. xiv, f. 3. *Phalæna.*

1888.—Beutenmüller, Can. Ent. vol. xx, p. 16. *Datana.*

Reddish brown, fore wings irrorate with brown scales, costal edge slightly brighter in tone, hind wings paler. The lines as in *angusii*. Thoracic patch deep red-brown, shading into ocherous brown on the head. Expanse 35--45 mm.

Hab.—Atlantic States westward.

D. californica Riley.

1890.—Dyar, Ent. Amer. vol. vi, p. 127.

Like *ministra* and *angusii* in markings, but very light in color, being clay-colored or testaceous.

Hab.—Coast region of California.

D. drexelii Hy. Edwards.

1884.—Hy. Edwards, Papilio vol. iv, p. 25.

1890.—Dyar, Psyche vol. v, p. 418.

Reddish brown, with paler ground color, of the color of *ministra*. The costal third of wing is bright ocherous brown, contrasting. Lines as in the preceding species, but centrally in the cell is a round, deep brown discal dot and another elongate one on the cross-vein. Thoracic patches as in *ministra*, but the hind wings are darker. Expanse 40—50 mm.

Hab.—Northern Atlantic States.

D. major Grote and Robinson.

1866.—Grote and Robinson, Proc. Ent. Soc. Phil. vol. vi, p. 12.

1890.—Dyar, Psyche vol. v, p. 415.

Dark reddish brown, darker than *ministra* or *drexelii*, and more evenly colored. The costal edge is not distinctly brighter in tone, and the hind wings are concolorous with the fore wings; marked as in *drexelii*. The outer margin is distinctly less scalloped than in any of the preceding species. In the ♂ it is nearly entire. Expanse 40—50 mm.

Hab.—Atlantic States.

D. palmii Beutenmüller.

1890.—Beutenmüller, Psyche vol. v, p. 299.

1890.—Dyar, Ent. Amer. vol. vi, p. 129.

1890.—Dyar, Ent. Amer. vol. vi, p. 181.

Chocolate-brown, the fore wings and posterior portion of thorax heavily overwashed with whitish lilac, leaving the lines and fringe deep brown. The lines have a tendency to become pulverulent and indistinct, so that the third and fourth are often very faint. Secondaries and abdomen pale brown, whitish, the secondaries with a satiny lustre. Thoracic patch deep brown, becoming ocherous on the head. Expanse 35—40 mm.

Hab.—Mountains of New York and Penna., Arkansas (Palm).

D. floridana Graef.

1880.—Graef, Bull. Brook. Ent. Soc. vol. iii, p. 37.

1881.—Roebele, Bull. Brook. Ent. Soc. vol. iv, p. 21.

1893.—Dyar, Psyche vol. vi, p. 573.

Closely allied to *palmii*, but less heavily overwashed with purplish; the lines are consequently more obscure. Secondaries darker.

Hab.—Florida to New York (Doll).

D. modesta Beutenmüller.

1890.—Beutenmüller, Psyche vol. v, p. 299.

Uniform deep brown, with an ocherous tinge like *floridana*, but without purplish tint. Lines obsolete, only the outer discernible, and that faint. Discal

dots almost black, a blackish shade at base and terminally. Secondaries brown, paler at base. Thorax dark brown, darker than the quadrate patch, which is ocherous brown, uniform. Expanse 50 mm.

Hab.—Florida.

D. perspicua Grote and Robinson.

1864.—Grote and Robinson, Proc. Ent. Soc. Phil. vol. iii, p. 489.

1891.—Dyar, Can. Ent. vol. xxiii, p. 82.

Light ocher-yellow, not irrorate, the markings and fringe clear yellowish brown, distinctly contrasted. Lines 1 and 5 distinct, the others more obscure and disappearing costa-wards. Onter discal dot very large and spreading. Hind wings very pale straw color. Thoracic patch ocherous brown. Exp. 40—50 mm.

Hab.—Atlantic States westward to Montana.

D. robusta Strecker.

1878.—Strecker, Lep. Pt. 14, p. 131.

1890.—Dyar, Ent. Amer. vol. vi, p. 131.

Slightly duller yellow than *perspicua*, and heavily irrorate with brown scales. Lines as in *perspicua*, the median (cubitus) and internal (anal) veins marked with brown. Discal dots as in *perspicua*, but sharing in the somewhat grayish tint of the whole wing. Secondaries largely tinged with brown outwardly. Thorax creamy-buff, the patch pale ocherous or slightly brownish, frequently appearing brighter than the thorax. Expanse 45 mm.

Hab.—Texas.

D. integerrima Grote and Robinson.

1886.—Grote and Robinson, Proc. Ent. Soc. Phil. vol. vi, p. 12.

1888.—Beutenmüller, Can. Ent. vol. xx, p. 134.

Dark reddish brown, usually without any purplish tint, slightly ocherous along costa. The lines are distinct and bordered outwardly by conspicuous pale shades. Discal dot obscure, as in *palmii* and *floridana*. Thoracic patch ocherous brown, darker posteriorly. Secondaries pale at base. Expanse 35—40 mm.

Hab.—Atlantic States westward.

D. contracta Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1062.

1890.—Beutenmüller, Ent. News vol. i, p. 144.

Light ocherous, slightly darker on costa of fore wings; irrorations and lines blackish, diffused and scattered, contrasting with the deep brown fringe. Discal dots rounded, moderately distinct, blackish.

Hab.—Atlantic States westward.

Genus **Nystalea** Guenée.

1852.—Guenée, Spec. Gén. Lép., Noct. vol. ii, p. 122.

N. indiana Grote.

1884.—Grote, Papilio vol. iv, p. 7.

Anterior part of thorax with a dull yellowish patch as in *Datana*, bordered by black; the rest gray. Fore wings much elongated; antennæ simple, ciliate, the cilia longer at base, a tuft on each joint at each side. Primaries cinereous,

paler on the disc, distinctly mottled; sub-basal line faint. T. a. and t. p. lines close together, straight, parallel, narrow, blackish brown, equidistant from the indistinct black discal ringlet. On veins 2-3 ($viii_2$–vii_1) near base, a black patch; another between veins 3-4 (vi_1–v_3) just outside t. p. line. Subterminal row of small black dots, two in each interspace, and terminal black shaded spots. Secondaries blackish, pale at base. Expanse 40 mm.

Hab.—Florida.

Subfamily HETEROCAMPINÆ.

Genus **Ianassa** Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1101.
Xylinodes Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 366.
Phya Druce.
1887.—Druce, Biol. Cent.-Amer., Lep. Het. vol. i, p. 242.

Synopsis of Species.

Yellowish or sordid cinereous..... **lignicolor.**
Bright bluish cinereous..... **coloradensis.**

I. lignicolor Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1101. *Ianassa.*
virgata Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 367. *Xylinodes.*
ligingera Walker.
1865.—Walker, Cat. Brit. Mus. vol. xxxii, p. 423. *Exæreta.*

Yellowish ash-gray, shading obscurely into wood color along internal margin. Markings all obscured and transformed into longitudinal strigose shades. A basal longitudinal line and black discal dot are moderately distinct. Abdomen and secondaries whitish, the latter with a gray patch at internal angle. Expanse 35–45 mm.

Hab.—Atlantic States.

I. coloradensis Hy. Edwards.

1885.—Hy. Edwards, Ent. Amer. vol. i, p. 17. *Ianassa.*

Bright ash-gray, not yellowish, shading along internal margin into wood color tinged with red-brown, more contrasting than in *lignicolor.*

Hab.—Colorado.

Genus **Dasylophia** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 362.

Synopsis of Species.

T. p. line on primaries distinct, arcuate, even..... **anguina.**
T. p. line obsolete superiorly; markings streaked longitudinally. **thyatiroides.**

D. anguina Smith and Abbott.

1797.—Smith and Abbott, Lep. Ins. Ga. vol. ii, pl. lxxxiv. *Phalæna.*
cucullifera Herrich-Schäffer.
1855.—Herrich-Schäffer, Samml. Auss. Schmett. vol. i, f. 381. *Drymonia.*
punctata Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 420. *Heterocampa.*
cana Walker.
1869.—Walker, Char. Lep. Het. p. 17. *Edema.*
var. **punctagorda** Slosson.
1892.—Slosson, Can. Ent. vol. xxiv, p. 139. *Dasylophia.*

Ash-gray, with a large basal flesh-colored patch on primaries in the ♀. Wings shaded with brown, the veins obscurely lined; markings faint. T. p. line distinct centrally, pale, edged with black, even, arcuate. A basal longitudinal streak, which may extend outward, defining the pale median veins (v_3, vii_1 and vii_2). Subterminally, two large, round, black spots between the median nervules. Secondaries pale in ♂, gray in ♀. Expanse 35 mm.

Hab.—Atlantic States.

The variety *puntagorda* is paler with white secondaries.

D. thyatiroides Walker.

1862.—Walker, Trans. Ent. Soc. Lond. (3) vol. i, p. 79. *Heterocampa.*
interna Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 363. *Dasylophia.*
tripartita Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 419. *Heterocampa.*
signata Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxiii, p. 758. *Xylina.*
1891.—Smith, Can. Ent. vol. xxxiii, p. 121. *Dasylophia.*

Brownish, obscured, faintly longitudinally streaked. T. a. line pale, outlined by a black shade, straight, bent inward at internal margin. T. p. line distinct near internal margin, sharply bent outward; two black spots between median nervules contiguous to a pale, brown bordered s. t. line, which becomes bordered inwardly in the interspaces in an indefinite manner subapically. Secondaries gray. Expanse 40 mm.

Hab.—Northern Atlantic States.

Genus **Schizura** Doubleday.

1841.—Doubleday, Ent. vol. i, p. 59.
Oedemasia Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 359.
Cœlodasys Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p, 363.
Hatima Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 450.

Synopsis of Species.

Transverse bands largely absent.
Size small (36 mm. or less), the brown shade along internal margin of primaries distinct..... **concinna.**
Size larger (40 mm. or more), this shade less distinct or absent.
Yellowish cinereous at apex, reddish shade moderately distinct.. **eximia.**
Bright cinereous at apex; shade along internal margin yellowish or absent. **perangulata.**

Transverse bands normally present.
Discal dot surrounded by a light cinereous space.
Scarcely any black shading on primaries.....**ipomœæ.**
Two long black dashes.....var. **telifer.**
Whole middle of wing black to outer margin.....var. **cinereofrons.**
Discal dot on the ground color.
Primaries pale green at extreme base .....**unicornis.**
Without green tints.
Discal dot lunate; size small.
Transverse lines distinct, black, coarsely undulate.....**apicalis.**
Lines faint, reddish, finely undulate .....**nitida.**
Discal dot round; size large.....**leptinoides.**

S. concinna Abbott and Smith.

1797.—Abbott and Smith, Lep. Ins. Ga. vol. ii, pl. 85. *Phalæna.*
semirufescens Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 424. *Edema.*
semirufescens Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 450. *Hatima.*
1892.—Smith, Can. Ent. vol. xxiv, p. 135.
* *salicis* Hy. Edwards.
1877.—Hy. Edwards, Proc. Cal. Acad. Sci. vol. vii, p. 121. *Heterocampa.*
riversii Behr.
1890.—Behr, Proc. Cal. Acad. Sci. (2) vol. ii, p. 94. *Dryocampa.*

Apical portion of wing cinereous, centre yellowish in ♂, dull olive-brown in ♀; region along internal margin dark ferruginous brown; markings absent, or very faint, veins blackish. A black basal dash and round discal dot, the latter sometimes absent. Secondaries white in ♂, cinereous gray in ♀, with a gray spot at anal angle. Expanse 33—36 mm.

Hab.—Atlantic States westward; California; Idaho (Packard).

S. eximia Grote.

1881.—Grote, Bull. U. S. Geol. Surv. vol. vi. p. 275. *Oedemasia.*

Thorax gray, patagia tipped with brown. Resembles *concinna*, but is larger and the wings more pointed. The wing is more shaded with gray, less distinctly yellowish, centrally in the ♂, so that the sexes are closely similar. The red shade along internal margin is less distinct, being partly blackish. Transverse maculations absent. Discal dot minute or absent. Secondaries pale grayish in ♂, darker in ♀, with indications of a whitish band and dark spot at anal angle. Expanse 42—50 mm.

Hab.—Northern Atlantic States, Pacific Northwest.

S. perangulata Hy. Edwards.

1882.—Hy. Edwards, Papilio vol. ii, p. 125. *Oedemasia.*

Thorax as in *eximia;* costal half of wing toward apex bright gray, the veins black lined, subapical black dashes present; lower half of wing and base yellowish, slightly marked. Transverse lines obsolescent, the t. a. discernible, blackish, lunulate, pulverulent. T. p. line represented by some reddish marks. A black basal dash; discal dot lunate, followed by a black cloud. Secondaries white, with black spot at internal angle. Rather variable, the wing sometimes quite uniformly colored.

Hab.—Colorado, Utah.

S. ipomœæ Doubleday.

1841.—Doubleday, Ent. vol. i, p. 60.
biguttatus Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 365. *Cœlodasys.*
confusa Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 413. *Drymonia.*
ducens Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 417. *Heterocampa.*
corticea Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 418. *Heterocampa.*
compta Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 418. *Heterocampa.*
nigrosignata Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 422. *Heterocampa.*

var. **telifer** Grote.

1880.—Grote, N. Am. Ent. vol. i, p. 99. *Cœlodasys.*

var. **cinereofrons** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 366. *Cœlodasys.*
ustipennis Walker.

1865.—Walker, Cat. Brit. Mus. vol. xxxii, p. 421. *Heterocampa.*

Gray along costa; the region along internal and outer margins nearly to apex suffused with reddish. Lines indistinct, pale, indicated by black dots on the veins. Discal mark narrow, lunate, situated in a light cinereous space and surrounded by a black cloud; veins indicated in black. Secondaries white in ♂, dusky at margin, gray in ♀. A black shade may overspread the whole centre of the wing from base to outer margin. Expanse 30—45 mm.

Hab.—Atlantic States westward; Pacific Northwest.

S. unicornis Abbott and Smith.

1797.—Abbott and Smith, Lep. Ins. Ga. vol. ii, pl. 86. *Phalæna.*
edmandsii Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 364. *Cœlodasys.*
humilis Walker.

1865.—Walker, Cat. Brit. Mus. vol. xxxii, p. 425. *Edema.*
conspecta Hy. Edwards.

1875.—Hy. Edwards. Proc. Cal. Acad. Sci. vol. v, p. 366. *Heterocampa.*

Purplish cinereous, tinged with sea-green at base and along costa of primaries, frequently with a buff colored, apical patch in the ♂. Discal dot black, linear. Transverse lines faint, blackish, lunulate, the t. p. line succeeded by a reddish shade. A series of subterminal, interspacial dashes, followed by white marks, most distinct between the median venules (v_3–vii). Secondaries whitish in ♂, dark gray in ♀. Expanse 30 mm.

Hab.—Atlantic States; California.

S. apicalis Grote and Robinson.

1866.—Grote and Robinson, Proc. Ent. Soc. Phil. vol. vi, p. 15. *Cœlodasys.*

Purplish ash-gray; discal dot large, black, lunate, followed by a black cloud. T. a. and t. p. lines obscurely geminate, black, coarsely waved, the t. p. curved outward opposite the cell; lower half of wing clouded with brownish; a narrow black basal streak. Veins outwardly slightly black lined. Secondaries white in ♂, with black spot at anal angle, blackish in ♀, with central pale band. Expanse 30 mm.

Hab.—Northern Atlantic States.

S. nitida Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 360. *Oedemasia.*
badia Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 361. *Oedemasia.*
1887.—Henshaw, Bull. 16th U. S. Dep't Agr. p. 43.
significata Walker.
1865.—Walker, Cat. Brit. Mus. vol. xxxii, p. 421. *Heterocampa.*

Pale dull ocherous, cinereous along costa; base and a large patch at internal angle reddish brown. Discal mark black, usually distinct, followed by a black cloud. Lines obscure, reddish brown, interspacially lunate; veins black lined subapically; an apical white patch and a series of subterminal white dashes contiguous to a terminal row of black points. Thorax blackish with a tinge of red. Expanse 30 mm.

Hab.—Atlantic States.

S. leptinoides Grote.

1864.—Grote, Proc. Ent. Soc. Phil. vol. iii, p. 323. *Heterocampa.*
mustelina Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 359. *Cecrita.**

Dark cinereous, slightly reddish along internal margin and whitish at apex. Discal dot round, black, minute. Lines obsolescent, blackish, geminate, undulate; veins darker. Secondaries whitish in ♂, dark gray in ♀. Expanse 35—40 mm.

Hab.—Atlantic States westward.

Genus **Euhyparpax** Beutenmüller.

1893.—Beutenmüller, Bull. Am. Mus. Nat. Hist. vol. v, p. 19.

E. rosea Beutenmüller.

1893.—Beutenmüller, Bull. Am. Mus. Nat. Hist. vol. v, p. 19.

Pinkish ocherous, inclining to rose color; a narrow, undulated, darker colored t. p. line with faint, pale, discal spot and dark subterminal spots. Secondaries rose colored, fringe paler. Expanse 40 mm.

Hab.—Colorado.

Genus **Heterocampa** Doubleday.

1841.—Doubleday, Ent. vol. i, p. 55.
Lochmæus Doubleday.
1841.—Doubleday, Ent. vol. i, p. 57.
Tadana Walker.
1855.—Walker, Cat. Brit. Mus. vol. v, p. 990.

Synopsis of Species.

Size large (expanse 40 mm. or more).
Discal streak lunate.
Wings varied with whitish, especially subapically.
With conspicuous greenish gray shades..... **astarte.**
More uniformly cinereous..... **obliqua.**
Wings very uniformly dark gray..... **lunata.**
Wings without distinct white subapical shade, sub-basal field dark. **umbrata.**
Discal mark ovate or reniform..... **manteo.**
Size small (expanse 35 mm. or less).
Wings greenish or gray, with white subapical shade..... **subrotata.**
Wings evenly gray, without any white shade..... **belfragei.**

* Dr. Packard has kindly given us this synonymy. But the larva described by Prof. G. H. French (Can. Ent. vol. xviii, p. 92), is not that of *S. leptinoides.*

H. astarte Doubleday.

1841.—Doubleday, Ent. vol. i. p. 57.

varia Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1023.

menas Harris.

1869.—Harris, Ent. Corr. p. 134. *Stauropus.*

chapmanii Grote.*

1881. Grote, Bull. U. S. Geol. Surv. vol. vi, p. 258.

Olivaceous gray, appearing paler than *obliqua;* thorax, basal space and a shade extending from median space subapically, whitish green, clouding the white subapical shade. Lines black, essentially as in *obliqua*, the subapical portion of the subterminal line more consolidated and narrower.

Hab.—Florida.

H. obliqua Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 368.

var. **trouvelotii** Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 369.

brunnea Grote and Robinson.

1867.—Grote and Robinson, Trans. Am. Ent. Soc. vol. i, p. 180.

Dark cinereous; transverse lines obscured, but the wing more or less varied with ochraceous, or ferruginous and white patches. Of the white patches, the most conspicuous is an oblique subapical one. Discal mark black, lunate, often linear. Secondaries white in ♂, smoky outwardly in ♀. In the form *trouvelotii*, the white marks are absent, the t. a. line moderately distinct, and the apical third of wing covered by a deep brown shade. Expanse 45—50 mm.

Hab.—Atlantic States.

H. lunata Hy. Edwards.

1884.—Hy. Edwards, Papilio vol. iv, p. 44.

plumosa Hy. Edwards.

1886.—Hy. Edwards, Ent. Amer. vol. ii, p. 14. *Lophodonta.*

dardania Druce.

1887.—Druce, Biol. Cent.-Am. vol. i, p. 237, pl. xxv, f. 4. *Heterocampa.*

Very uniform dark gray, darker in the basal field and sometimes discolored, recalling the ornamentation of *Notodonta.* Transverse lines obsolete. Discal mark black, lunate. Secondaries grayish, especially along costal border. Expanse 40 mm.

Hab.—Colorado to Arizona, Mexico.

H. umbrata Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1023.

semiplaga Walker.

1861.—Walker, Can. Nat. and Geol. vol. vi, p. 37.

1882.—Grote, New Check List, p. 19.

1892.—Smith, Can. Ent. vol. xxiv, p. 136.

pulverea Grote and Robinson.

1867.—Grote and Robinson, Trans. Am. Ent. Soc. vol. i, p. 185.

athereo Harris.

1869.—Harris, Ent. Corr. p. 134, note. *Stauropus.*

Thorax pale greenish gray, with a blackish line on collar. Primaries pale olivaceous ashen, shaded with darker greenish gray from the basal line to the

* Dr. Packard writes us: "On seeing Mr. Thaxter's type of *H. chapmanii* I think it must be for the present regarded as distinct from *astarte.*" We have no personal knowledge of this form.

lunate discal mark and below median vein out to subterminal line. Transverse lines blackish, geminate, lunulate, not very well defined. Subterminal line distinct, blackish, broad, composed of well fused, diffuse, subtriangular spots, nearly straight. Abdomen in ♀ with dark dorsal tufts. Secondaries dusky, with paler mesial band. Expanse 40—50 mm.

Hab.—Atlantic States.

H. manteo Doubleday.

1841.—Doubleday, Ent. vol. i, p. 58. *Lochmæus.*
cinerascens Walker.
1855.—Walker, Cat. Brit. Mus. Pt. v, p. 991. *Tadana.*
subalbicans Grote.
1863.—Grote, Proc. Ent. Soc. Phil. vol. ii, p. 336. *Heterocampa.*

Cinereous gray; secondaries slightly brownish, dark in both sexes. T. a. and t. p. lines blackish, geminate, obscure, filled in with whitish in ♀. Discal spot black, kidney-shaped, sometimes obscure. Subterminal line whitish, faint. A terminal series of black dashes. Expanse 40 mm.

Hab.—Atlantic States.

H. subrotata Harvey.

1874.—Harvey, Bull. Buff. Soc. vol. i, p. 263.
celtiphaga Harvey.
1874.—Harvey, Bull. Buff. Soc. vol. i, p. 263.
superba Hy. Edwards.
1884.—Hy. Edwards, Papilio vol. iv, p. 121.

Bright olivaceous or cinereous; basal line black, distinct; transverse lines geminate, black, including a light brown shade; a semilunar discal streak followed by a pale space reaching t. p. line. Subterminally the wing is whitish, relieving the irregular disconnected subterminal line, which appears as black interspaceal streaks. A narrow terminal line. Expanse 18—34 mm.

Hab.—Southern States to Texas.

H. belfragei Grote.

1879.—Grote, Can. Ent. vol. xi, p. 209.

Uniform ash-gray, faintly brownish; basal line black. T. a. and t. p. lines geminate, obscure, paler centrally. Discal dot lunate, black. Subterminal line transformed into two brown-black, oblique dashes from veins 7–4 (iii_5–v_3) and 4–1 (v_3–ix). Secondaries white; a terminal brown line. Thorax dark gray. Expanse 35 mm.

Hab.—Texas.

Genus **Cecrita** Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 992.
Seirodonta Grote and Robinson.
1868.—Grote and Robinson, List. Lep. N. Am. p. 1.

Synopsis of Species.

Dull greenish; transverse lines purplish brown, geminate, lunulate..**biundata.**
Whitish, clouded with black; transverse lines faint.....**guttivitta.**
Cinereous, with black, geminate, angular, transverse lines.....**bilineata.**

C. biundata Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 1025. *Hetercampa.*
olivatus Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 371. *Lochmæus.*
viridescens Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 416. *Stauropus.*
mollis Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 422. *Heterocampa.*

Greenish cinereous; transverse basal, t. a. and t. p. lines purplish geminate, lunulate, filled in with light brown. Discal mark brown linear; a purplish cloud below it. Subterminal, purplish, intervenular, rounded spots. Secondaries cinereous, with pale mesial line. Expanse 34—40 mm.

Hab.—Atlantic States.

C. guttivitta Walker.

1855.—Walker, Cat. Brit. Mus. Pt. v, p. 992.
albiplaga Walker.
1856.—Walker, Cat. Brit. Mus. Pt. vii, p. 1748.
mucorea Herrich-Schäffer.
1856.—Herrich-Schäffer, Ausser. Schmett. vol. i. f. 514. *Drymonia.*
harrisii Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 365. *Cœlodasys.*
indeterminata Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, Pt. 413. *Drymonia.*
? doubledayi Scudder.
1869.—Scudder, Harris' Ent. Corr. 134, note, sp. 3. *Heterocampa.*

Whitish gray, with an olivaceous tinge; pale toward apices. Discal dot obscure, linear, surrounded by a whitish space; markings very faint or absent, except the blackish subterminal spots, which are very distinct in the ♀. Base of primaries or whole wing more or less clouded with black. Secondaries grayish, darker in ♀. Expanse 40 mm.

Hab.—Atlantic States.

C. bilineata Packard.

1864 –Packard, Proc. Ent. Soc. Phil. vol. iii, p. 359.
turbida Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 419. *Heterocampa.*
associata Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 426. *Edema.*
ulmi Harris.
1869.—Harris' Ent. Corr. pp. 245, 302. *Notodonta.*

Male light cinereous, tinged with blackish. A black basal dash; t. a. and t. p. lines black, geminate, angulated on the veins. Discal dot black, sublunate, often faint. Subterminal line sinuate, whitish, continuous. Female more evenly colored and less distinctly marked. Expanse 30—40 mm.

Hab.—Atlantic States.

Genus **Misogada** Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 449.

M. cinerea Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 372. *Lochmæus.*
unicolor Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 373. *Lochmæus.*
marina Packard.
1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 373. *Lochmæus.*
sobria Walker.
1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 450. *Misogada.*

Uniform ash-gray or faintly tinged with green; secondaries pale at base. T. p. line represented by a series of blackish venular dots, each succeeded outwardly by white, but these marks may be absent. T. a. and s. t. lines sometimes faintly indicated. Expanse 35—45 mm.

Hab.—Atlantic States westward.

Genus **Litodonta** Harvey.

1876.—Harvey, Can. Ent. vol. viii, p. 5.

L. hydromeli Harvey.

1876.—Harvey. Can. Ent. vol. viii, p. 5.

var. **fusca** Harvey.

1876.—Harvey, Can. Ent. vol. viii, p. 110.

Whitish cinereous, with a dull green tinge. Transverse basal, t. a. and t. p. lines, black, geminate, sublunulate, sinuate. Discal mark black, lunate. A purplish cloud fading into white subapically. A row of subterminal black spots preceded by orange scales; a narrow terminal line. Secondaries dusky. Expanse 34 mm.

Hab.—Southern States to Texas.

The variety *fusca* lacks the green tint, being cinereous gray.

Genus **Macrurocampa** Dyar.

1893.—Dyar, Ent. News vol. iv, p. 34.

M. marthesia Cramer.

1779.—Cramer, Pap. Exot. vol. iii, pl. 264, fig. B. *Noctua.*

tescila Packard.

1864.—Packard, Proc. Ent. Soc. Phil. vol. iii, p. 370. *Lochmæus.*

turbida Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 407. *Cerura.*

elongata Grote and Robinson.

1867.—Grote and Robinson, Tr. Ent. Soc. Phil. vol. i, p. 184. *Heterocampa.*

Whitish, tinged with gray and pale greenish. T. a. line black, distinct, geminate, angular. Basal space filled in with dark shadings. Beyond this, the wing is pale, the marks obscured. A median blackish band and t. p. line indicated, the latter obscurely geminate, filled in with whitish. A blackish, transverse, discal mark. Subterminal spots shaded, blackish, connected into a band, most distinct in the interspaces between veins 2 and 3 (cell $viii_2$). Secondaries smoky, with whitish mesial band. Expanse 40 mm.

Hab.—Atlantic States.

Genus **Ellida** Grote.

1876.—Grote, Can. Ent. vol. viii, p. 125.

E. caniplaga Walker.

1856.—Walker, Cat. Brit. Mus. Pt. ix, p. 18. *Cymatophora.*

1893.—Smith, Bull. 44, U. S. N. M. p. 29. *Bombycia.*

transversata Walker.

1865.—Walker, Cat. Brit. Mus. Pt. xxxii, p. 427. *Edema.*

gelida Grote.

1876.—Grote, Can. Ent. vol. viii, p. 125. *Ellida.*

1892.—Smith, Can. Ent. vol. xxiv, p. 135.

Ash-gray, collar blackish. Secondaries and abdomen pale brownish. T. a. line arcuate, broad, black, pulverulent and broken, followed by a more rigid line, which does not quite attain internal margin. Between these are traces of another line; all three very closely approximate. A sublunate black discal dot, surrounded by a white shade. Outer half of wing faintly clouded, showing traces of t. p. and s. t. lines, but very faintly. Expanse 30 mm.

Hab.—Northern Atlantic States.

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